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EDITED BY

BROOKS H. WELLS, M. D.

*Professor of Gynecology at the New York Polyclinic and Gynecological Surgeon to the New York Polyclinic Hospital; Consulting Gynecologist to Beth Israel Hospital, New York; Consulting Abdominal Surgeon to the Brattleboro Memorial Hospital, Brattleboro, Vermont; Associate Surgeon to the Woman's Hospital of the State of New York; Fellow of the American Gynecological Society; Associate Fellow of the American Association for Cancer Research; Fellow of the New York Academy of Medicine, the New York Obstetrical Society, The American Medical Association.*

AND

THOMAS S. SOUTHWORTH, M. D.

*Attending Physician, Nursery and Childs Hospital, New York City Children's Hospital (Randalls Island); The Hospital for Scarlet Fever and Diphtheria Patients; Physician Out-Patient Department, Babies Hospital; Fellow of the American Pediatric Society, The American Medical Association, New York Academy of Medicine.*

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## LIST OF CONTRIBUTORS.

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ARTEAGA, JULIO F., Havana, Cuba.  
BAER, B. F., Philadelphia, Pa.  
BALDWIN, J. F., Columbus, O.  
BALLARD, CHARLES NELSON, Oklahoma City, Okla.  
BARNARD, E. P., Philadelphia, Pa.  
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## ORIGINAL COMMUNICATIONS.

### TERMINAL EVENTS IN GALLSTONE DISEASE.<sup>1</sup>

BY

CHARLES N. SMITH, M. D.,

Toledo, O.

Gynecologist to St. Vincent's Hospital.

THIS consideration of the terminal events in gallstone disease is presented with the hope that it may provoke a discussion so vigorous in its nature that renewed and new interest may be awakened in the subject of cholelithiasis, and, through a more keen appreciation of the disabling and even fatal disasters attending its terminal events, that physicians and surgeons alike may be prompted to advise and to institute operative procedures for early relief in practically every case of gallstones.

That gallstone disease is extremely prevalent, afflicting from 7 to 10 per cent. of adults dying in the public hospitals of England,<sup>(1-2)</sup> Germany<sup>(3-4)</sup> and America,<sup>(5)</sup> is a contention apparently substantiated by the records of thousands of postmortem examinations. While we may accept as accurate these findings as to the relative frequency of gallstones, in that they are a record of facts, certain inferences drawn therefrom are unwarranted. A number of writers, in commenting upon these examinations, seemingly assuming the right to speak with authority for the voiceless dead, dogmatically assert the claim, defenseless and groundless though it must be, that in the great majority of instances these gallstones produced at no time in their history either symptoms or damaging results. This conclusion is based upon a misinterpretation of the early and the mild symptoms of cholelithiasis, which, present knowledge leads

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

us to believe, were present at some time in the life history of the individuals so afflicted.

The symptomatology of gallstone disease as given in our textbooks, with almost no exception, is but a recitation of terminal events and of the symptoms produced by them. The late and terminal complications, rather than the early and initial manifestations of the disease, have received consideration, and because of this, a symptomatology has been evolved which, being but the symptomatology of terminal events, fails in its purpose in so far as the diagnosis of gallstones at an early period in their history is concerned. The so-called latent gallstones, which may have escaped the serious complications of terminal events, have been passed over unrecognized because not accompanied by this stormy symptom complex.

Because of the erroneous statement, based upon conclusions drawn without warrant from the above mentioned postmortem examinations, and so frequently repeated in the literature of cholelithiasis, to the effect that in the great majority of instances gallstones are unproductive of either symptoms or serious complications, the impression that, as a rule, gallstones are void of serious danger has obtained widespread credence. This, together with the fact that the diagnosis of gallstones seldom has been made prior to the onset of complications, has resulted in gallstone surgery becoming largely the surgery of terminal events.

Our distinguished Fellow, John B. Deaver,(6) in a paper read before the Southern Surgical and Gynecological Association in 1907, made a masterly argument against the performance of cholecystectomy in all those cases in which it is probable that the gall-bladder still retains, or can regain through a drainage operation, its functional powers. In two subsequent papers(7-8) he reports a total of 254 operations for gallstone disease and its complications. Of this number, 101 or 40 per cent., were cholecystectomies. The performance of this relatively enormous number of cholecystectomies by a surgeon strongly opposed to the operation save as one of absolute necessity, strikingly demonstrates the fact that a large proportion of the patients with gallstone disease are referred to the surgeon for relief, or seek such relief on their own initiative, only when confronted by the serious and destructive lesions of terminal events.

The formation of gallstones within the gall-bladder is the

result of a low grade infection of the mucosa of that viscus. Virulent infections of the gall-bladder are practically never the cause of gallstone formation, but almost invariably are complications thereof. The combination of infection and a foreign body within the gall-bladder is sufficient to excite an acute cholecystitis, which may occur, but with less frequency, in the absence of the foreign body. This acute inflammation must be looked upon as a terminal phenomenon in gallstone history, occurring only after a more or less prolonged occupancy of the gall-bladder by the calculi, during which time their presence was fairly well announced by their initial symptoms.

With extension of the inflammation to the cystic duct, occlusion of that duct may occur and thereafter the gall-bladder forever will remain eliminated from the biliary circuit, void of function and a constant menace to the comfort and life of its possessor. Depending upon the activity of the infecting bacteria, either hydrops or empyema of the gall-bladder, occurring independently or sequentially, may follow occlusion of the cystic duct from inflammation or from blockage by stone. Either condition frequently necessitates the performance of cholecystectomy, and in the light of our present knowledge of the etiology and treatment of chronic pancreatitis, the performance of a cholecystectomy is a distinct disadvantage to the individual, remote, it is true, but still a disadvantage.

This occlusion of the cystic duct from inflammation excited by the irritation of gallstones, as well as the direct blockage of the duct by stone, so frequently rendered permanent by contraction of the inflamed duct about the offending concretion, must be looked upon as a terminal event in the progress of cholecystitis, itself a complicating and comparatively late event in gallstone disease. The still later sequential phenomena of hydrops, empyema, gangrene, ulceration, perforation and rupture of the gall-bladder, as well as sclerosis, contraction and obliteration, are terminal events of a higher degree.

In hydrops, occurring in the early catarrhal stage of an acute cholecystitis, or from the recurrent exacerbations of a chronic inflammation, the walls of the gall-bladder, greatly distended by the outpouring of mucus, generally become extremely tenuous. I have removed such a gall-bladder, measuring seven inches in length and one and one-half inches in diameter, in which the walls were as thin as tissue paper. Rupture of such a thin walled cystic gall-bladder is an ever existing danger.

The most serious complication, and one which threatens every case of hydrops, is a secondary empyema resulting from reinfection of the gall-bladder and its imprisoned contents. In October, 1908, I operated on a woman in whom hydrops had been present for over one year, the enormously distended gall-bladder being readily grasped through the relaxed abdominal walls. While feeling remarkably well, she was taken with a severe chill, followed by a high temperature, sweating, and a drop in temperature to 97°. I saw her within a few hours, transported her thirty miles, and performed a cholecystectomy immediately after her arrival at the hospital. The gall-bladder, which had not ruptured, could be likened in appearance only to the viciously inflamed and distended bowel of complete intestinal obstruction. It was enormously distended with a thin, turbid, muco-purulent fluid. The cystic duct was completely occluded, the result of inflammatory action. One gallstone occupied a pocket in the sigmoid twist of the duct. Recovery followed the operation. This was one of those "innocent" or "latent" gallstones which we are told, so repeatedly, should be treated, in the poor, by the administration of sodium phosphate; in the rich, by a trip to Carlsbad. When a secondary empyema thus occurs, rupture, with infection of the general peritoneal cavity is a practically certain termination, unless anticipated by surgical relief. Such terminal events in gallstone disease are by no means rare.

In empyema resulting from an acute cholecystitis with an infection of a high degree of virulence, the gall-bladder is enlarged and its walls are edematous, swollen and thickened. Suppuration, ulceration, and possibly gangrene and perforation, are synchronously occurring phenomena. Gangrene may be limited to a small area or involve the entire gall-bladder. Perforation into the intestine may take place, affording relief of tension and efficient drainage, followed by contraction, practically amounting in some instances to an obliteration of the gall-bladder.

Rupture of the suppurating gall-bladder into the general peritoneal cavity is by no means an unusual terminal event, having occurred five times in my own experience. Of these five cases, four made a complete recovery after operation, while the remaining one, a desperate and delayed case, with a widespread peritonitis, died on the table as the abdominal incision was completed.

From observation of these and other cases, and from a study

of the literature of the subject, I am convinced that the frequency with which rupture of the gall-bladder occurs as a terminal event in gallstone disease is scarcely appreciated. In my opinion these cases are commonly diagnosed as peritoneal infection from appendicitis, operated on as such and so recorded unless gallstones, correcting the diagnosis, are found in the peritoneal cavity. All of us, knowing the vagaries of the appendix and its possibilities as a mischief maker, readily can excuse the error.

One of my cases, a few months before coming to me, had been operated on for a supposed appendicitis and the appendix removed. When a gauze drain was being removed, some days following the operation, a gallstone escaped from the cavity and others were expelled at subsequent intervals. Pus was discharging from the incision when she consulted me, and several gallstones were removed from the sinus by the scoop. The gall-bladder, containing one immense stone and a number of small ones, was removed and recovery followed.

Two others were brought for operation with a diagnosis of appendicitis, because of pain, tenderness and swelling in the right half of the abdomen. Correction of the diagnosis prior to operation was not difficult. Free incision, removal of gallstones, cleansing of the cavity, abundant drainage, with the patient in the Fowler position, were followed by slow but eventual recovery.

The following case presents many of the disastrous terminal events of latent gallstones—suppuration, rupture, peritonitis, chronic pancreatitis and duodenal obstruction—all of which could have been avoided by an early operation, which had been advised.

Miss D., aged fifty-four, a patient of Drs. Rohn and Reynolds, of Defiance, Ohio, was operated on, November 4, 1908, for rupture of the gall-bladder occurring about sixty hours previously. For twenty-seven years this patient had been the subject of gallstone disease, in its "innocent" or "latent" form, as indicated by the stomach symptoms so invariably present and so frequently mistaken for indigestion, gastralgia or gastroduodenitis. During this twenty-seven years she had never missed a day from her duties as teacher in the public schools, so slight had been the disturbances created by the gallstones. That chronic pancreatitis had been present for a considerable period was then shown by disturbances in digestion and in carbohydrate metab-

olism, by loss in weight and repeated hemorrhages into the skin, by local signs and a positive Cammidge reaction in the urine. Suppuration in the gall-bladder had been indicated by the usual symptoms through a period of four days. Rupture was announced by sudden, severe pain, exquisite tenderness and a degree of collapse closely approaching death. I operated in that deceptive period of repose when all warning symptoms were in abeyance.

The walls of the enlarged gall-bladder were thickened and edematous. The rupture was in the fundus. Pus and bile escaped from the gall-bladder and quantities of seropurulent fluid and bile from the peritoneal cavity. A second incision was made low in the abdominal wall into the pelvic cavity and fluid of the same character obtained. The cystic duct contained four gallstones but was not permanently blocked thereby, as was shown by the presence of bile in the gall-bladder and the peritoneal cavity. Gallstones were found in the peritoneal cavity and the gall-bladder. The head of the pancreas was indurated, lobulated and decidedly enlarged, unquestionably from chronic pancreatitis.

Because of the existence of chronic pancreatitis, necessitating biliary drainage for its cure, and because the cystic duct was not occluded, making possible the restoration of function in the gall-bladder, the latter was not removed but simply drained. A large split rubber drain was placed alongside the gall-bladder, another in the right kidney pouch, and a third in the pelvis. The patient was placed in Fowler's position and normal saline solution administered by continuous flow through the rectum. Drainage of the gall-bladder continued for fourteen weeks. The recovery was slow but, in the main, satisfactory.

This patient consulted me again in July of the present year. All symptoms referable to the biliary tract and the pancreas had disappeared. There were present, however, positive symptoms of nearly complete obstruction at the pylorus or in the duodenum. Vomiting of stomach contents immediately after every meal was a regular event. The patient had lost 50 pounds in weight since the day on which rupture of the gall-bladder had occurred. Gastrojejunostomy was performed July 19. The adhesions resulting from the peritonitis, secondary to the rupture of the suppurating gall-bladder, had so displaced and angulated the duodenum that a practically complete obstruction existed. No attempt was made to separate the adhesions and restore the duodenum to its natural condition and position.

The most valuable and interesting information obtained from this second abdominal exploration, relates to the condition of the pancreas. Within a period of eight months and following fourteen weeks of biliary drainage, the pancreas had been restored to a perfectly normal condition. The induration, lobulation and swelling had completely disappeared. Several attempts to obtain Cammidge's reaction in the urine were negative in result. The patient, seen September 8, is well in every particular. She retains all her food, digests it with comfort, and is gaining in weight.

A distinction must be made between rupture of the gall-bladder, a sudden process in the course of an acute infection, and slow perforation, a gradual process in the course of a chronic cholecystitis. The one immediately threatens life; the other, only remotely. As a result of this ulceration terminating in slow perforation, gallstones are extruded from the gall-bladder and are found occupying little pockets, or nests, under preformed adhesions, such pockets in some instances communicating with the gall-bladder, in others being entirely shut off therefrom. Occasionally this slow perforation takes place into the substance of the liver, where the gallstones might be overlooked in the performance of a cholecystostomy, but readily discovered in the course of a cholecystectomy. Moynihan(9) believes this to be a not uncommon event, he having found four such cases in his first twenty cholecystectomies.

While these aberrant calculi undoubtedly may remain for months or years safely and quietly housed in these extracystic pockets, infection may occur and abscess result; or the calculi may by ulceration escape into the stomach, duodenum or colon. This latter termination accounts, in some instances, for large stones finding their way into the intestine where they may produce intestinal obstruction, an uncommon but not rare event. Sclerosis and contraction of the gall-bladder wall may follow repeated attacks of acute cholecystitis, of hydrops, of empyema, or the exacerbations of a long continued chronic inflammation. The gall-bladder becomes distorted in outline, assuming the shape of the gallstones over which its walls are tightly drawn. Two or more compartments, connected or separated, may be found, every one occupied by one or more gallstones. Not infrequently, the gall-bladder becomes nearly or quite obliterated.

When one sees a gall-bladder completely packed with calculi, the contracted walls hugging them tightly, with little pockets

or nests under overlying adhesions, each nest occupied by a gallstone which has ulcerated its way through the walls of the gall-bladder, he appreciates the fact that he is viewing a terminal event, and that at some time in the past that patient has passed through a stormy period of cholecystitis—a period during which a diagnosis of gallstones should have been made.

Pericholecystitis is a not infrequent terminal complication of both acute and chronic cholecystitis. As the inflammation within the gall-bladder varies in intensity, so does that without. In the chronic form, the onset and progress of the disease may be so insidious that symptoms are practically absent until the presence of crippling adhesions to the stomach, duodenum or colon, is made manifest by disturbances in function of the adherent viscera. The adhesions in pericholecystitis, from either an acute or a chronic infection of the gall-bladder, may cause so great a degree of discomfort, of actual pain, or of disability, that operation will be required for relief, irrespective of other lesions produced by the offending gallstones.

Traction of the adhesions upon the stomach or duodenum may produce an obstruction to the onward passage of food. In some instances these adhesions are so general and so complicated that the separation of them is attended by great difficulty and by slight promise of ultimate permanent relief. With no obstruction to the outflow of bile, from either adhesion or stone, gastrojejunostomy with no separation of adhesions has given satisfactory results in two of my own cases. In one of these, dense adhesions to the colon, which had produced a most troublesome obstipation, were divided with relief of the colonic obstruction. When, however, the adhesions are the cause of pain or disability from traction on the gall-bladder, or from angulation of the common duct interfering with the biliary flow, or when a stone is present in the common duct, the separation of such adhesions becomes a necessity. After the separation and replacement of the adherent viscera, the omentum, as suggested by Andrews,(10) should be upturned between the biliary tract, on the one hand, and the stomach, duodenum and colon, on the other.

The presence of a stone in the common duct must be looked upon as a terminal event in the history of that stone, which, originating in the gall-bladder, as is generally, if not invariably, the case, has later effected its passage, stormy though it may have been, through the convoluted cystic duct. The frequency with

which gallstones invade the common duct is much greater than is shown by the statistics of the earlier investigators. Mayo(11) found common duct stone in 207, or 14 per cent. of 1,500 operations on the gall-bladder and ducts. Kehr,(12) in 720 gallstone operations, found common duct stone in 137, or 19 per cent. Deaver,(13) in 245 cases of gallstones, found stone in the common duct in 56, or 23 per cent. Mayo Robson(14) reports that in his recent experience calculi have been found in the common duct in 40 per cent. of the cases of gallstones operated on by him. This latter percentage of common duct stone is much higher than is shown by the general experience of surgeons, and must result from either a more searching examination of the ducts by Robson than is customary with others, or from the fact that a more severe and complicated class of cases fall into his hands. Robson further found that, in over 80 per cent. of the cases of common duct lithiasis, more than one stone was present in the duct.

While a stone in the gall-bladder may, in many instances, produce only slight symptoms and inconsequential results, it enters the common duct pregnant with power for the production of terminal events of a serious and destructive nature. Having at its extremities, on the one hand, the liver—on the other, the pancreas; being the only excretory duct of the former, and merging in a common outlet with the duct of the latter; the common duct occupies a strategical position commanding the welfare and integrity of both organs, each of which is essential to life. The colic, announcing the passage of a stone along the common duct, which must be considered as a terminal event in gallstone disease, may vary in intensity from a scarcely appreciable and transitory pain, to one of extreme degree, resulting in utmost agony, in collapse and in death.

Blockage of the duct by stone, be it complete or incomplete, is fraught with dangers of the greatest severity, not to the duct alone, but to the liver as well. In the absence of infection, the block produces results only of a mechanical nature. The biliary channels proximal to the block, including the intra-hepatic radicles, may become enormously distended, resulting in marked biliary engorgement and enlargement of the liver, in disturbance in its excretory function and in the reabsorption of its products.

Blockage of the duct is frequently the determining factor in the production of an infection which may involve the entire

biliary tract from the minutest divisions of the intrahepatic radicles to the ampulla of Vater. As in the gall-bladder, the infections of the duct may present the greatest gradations in severity. Exacerbations of cholangic infection, each marked by its chill, its sudden high temperature with its rapid fall, and its sweating—recurring at irregular intervals as a rule, but occasionally with marked regularity—so closely simulate the paroxysms of malarial intoxication as to be mistaken therefor. In the highly infectious types, suppuration, ulceration and perforation, may go hand in hand. With involvement of the intrahepatic radicles, abscess of the liver, although infrequent, is a serious complication often fatal in its results. Rogers(15) reports twenty such cases, in eighteen of which gallstones stood in a causal relation.

It is in common duct stone, with its resulting cholangitis, that jaundice is so generally a symptom. That jaundice has held, and still holds, an unwarranted importance as a symptom of gallstone disease, is a deplorable but indisputable fact. In arriving at a diagnosis of gallstones, valuable time is wasted, all too frequently, in waiting for the appearance of jaundice. With the general acceptance of the fact that jaundice, almost without exception, is a late symptom, marking the occurrence of a terminal event in gallstone disease, will disappear the greatest stumbling block in the way of early diagnosis. That cholangitis and cholecystitis may result from typhoid infection in the absence of stone, and that such infection may progress to perforation, is well established. Typhoid infection of a biliary tract already occupied by gallstones, must be looked upon as a secondary infection of most serious import.

Mayo Robson(16) first called attention to the occurrence of chronic pancreatitis as a complicating terminal event in gallstone disease. His subsequent writings and the experience of many surgeons have shown that pancreatitis is a disease of frequent occurrence and that in practically 80 per cent. of the cases, gallstones have borne an etiological relation thereto. The symptomatology of the disease is becoming well understood, and the diagnostic and confirmatory value of Cammidge's pancreatic reaction is supported by those who have embraced their opportunities for its frequent employment.

One decided advance arising from the present knowledge of chronic pancreatitis and its pathology, is the recognition of the fact that, in many instances of supposed cancer of the head of

the pancreas, the swelling, induration and lobulation is the result, not of malignancy but of inflammation. The differential diagnosis of the two conditions is not difficult, and upon the decision must rest the prognosis and the question of operative treatment. Chronic pancreatitis will yield to biliary drainage, either temporary or permanent, while malignant disease must, of necessity, remain undisturbed in its progress to a fatal issue.

The relations of the common bile duct to the head of the pancreas and to the pancreatic duct, and of both of these ducts to the duodenum, as well as the course of the lymphatics from the gall-bladder to the head of the pancreas, are of importance in the etiological relation of gallstones to pancreatic inflammations. The sequence of common duct stone, cholangitis, and pancreatitis by ascending infection through the pancreatic duct, is well established, while that of gall-bladder stone, cholecystitis, and pancreatitis by direct lymphatic invasion, as contended by Maugaret,<sup>(17)</sup> seems equally certain.

Chronic pancreatitis presents two distinct pathological and clinical pictures, the interacinar and the interlobular, depending upon the location of the fibrosis, which is the essential pathological process of the disease. In the interacinar type the fibrosis occurs within the lobules and surrounding the glandular acini, with early encroachment upon, and involvement of, the islands of Langerhans, resulting in diabetes. Fortunately, this form of pancreatitis seldom, if ever, follows directly from gallstone disease. It is in the interlobular type of chronic pancreatitis, with the fibrosis primarily external to the lobule and only secondarily slowly extending from the periphery into the lobule, with late involvement, if any, of the islands of Langerhans, that gallstone disease plays so important a part in etiology.

The operative results obtained by many surgeons prove that, in the majority of instances, chronic pancreatitis can be cured by the removal of the offending gallstones and the subsequent temporary or permanent drainage of the biliary tract. At what point in the course of a chronic pancreatitis, biliary drainage may fail as a curative agent, is not established. Neither can it be determined which particular case of gallstone disease will terminate in pancreatitis, nor at what stage of the former the latter will occur. The early surgical removal of gallstones, only, can forestall the occurrence of a pancreatitis, with a possible diabetes, as terminal events in gallstone disease.

Of the many terminal events of gallstone disease, malignancy is without question the most hopeless from the standpoint of cure. That primary malignant disease of the gall-bladder and ducts is preceded by gallstones in practically every instance, is the experience of surgeons and pathologists. Ochsner(18) states that in primary cancer of the gall-bladder he has always been able to get a history of gallstones dating back many years, and in operating and in conducting autopsies in such cases has invariably found gallstones present in the gall-bladder. Brodowski found gallstones in all of forty cases of primary cancer of the gall-bladder. Musser,(19) in 100 cases of primary cancer of the gall-bladder, found gallstones in sixty-nine, while Jayle found them in twenty-three out of thirty cases of primary gall-bladder cancer. Siegert(20) holds that gallstones are present in 95 per cent. of all cases of primary cancer of the gall-bladder, and Beadle,(21) at the London Cancer Hospital, found gallstones present in all of the cases of primary cancer of both the gall-bladder and the liver. Mayo,(22) in 1,800 operations on the biliary tract, found primary cancer in 4 per cent., while Sherrill(23) places the percentage of cancer incidence at fourteen, which is practically the same figure reached by Schroeder.

In the face of all this accumulated experience, which harmonizes so closely, and from which it would seem that but one conclusion could be drawn as to the etiology of primary cancer of the gall-bladder and ducts, the majority of the cases of recognized gallstone disease are allowed to drift along, from one terminal event to another, with the most optimistic indifference on the part of the profession.

Other complications than those here mentioned—some common, others rare: some severe, others mild—are found as late conditions in gallstone disease and, while no particular one occurs with great frequency, when taken as a whole, the occurrence of serious and even fatal terminal events is extremely common. It would seem that a due appreciation of the frequent occurrence and the serious import of these complications must lead to the surgical removal of gallstones, as a conservative and prophylactic measure, long before the opportunity is given for the onset of these terminal events. That this may be done will require a more general recognition of the initial symptoms of gallstone disease, with diagnosis based thereon, rather than upon the symptoms produced by these same terminal events.

## BIBLIOGRAPHY.

1. Voelcker. *Brit. Med. Jour.*, 1898, vol. ii, p. 1555.
2. Brockbank. *Edinburgh Med. Jour.*, vol. iii, p. 51.
3. Naunyn. *Cholelithiasis*, p. 144. Transl. New Syd. Soc.
4. Kehr. On Gallstone Disease, p. 99. Amer. translation.
5. Mosher. *Johns Hopkins Hosp. Bull.*, Aug., 1901.
6. Deaver. *Amer. Jour., Med. Sc.*, April, 1908, p. 536.
7. Deaver. *Amer. Jour., Med. Sc.*, Jan., 1908, p. 37.
8. Deaver. *Amer. Jour., Med. Sc.*, Nov., 1908, p. 625.
9. Moynihan. Gallstones and their Surg. Treat., p. 272.
10. Andrews. *Jour. Amer. Med. Ass'n.*, Sept. 16, 1905.
11. Mayo, W. J. *Annals of Surg.*, Aug., 1906, p. 209.
12. Kehr. *Von Bergmann's Surg.*, vol. iv, p. 691
13. Deaver. *op. cit.* nos. 7 and 8.
14. Robson. *Surg., Gynec. and Obs.*, Jan., 1906, p. 1.
15. Rogers. *Brit. Med. Jour.*, vol. ii, 1903, p. 706.
16. Robson. *Lancet*, vol. ii, 1900, p. 235.
17. Maugaret. *Cholecysto-Pancreatite*, Essai de Path., 1908.
18. Ochsner. *Gynec. and Abdom. Surg.*, Kelly-Noble, vol. ii, p. 289.
19. Musser. *Boston Med. and Surg. Jour.*, Dec. 15, 1899.
20. Siegert. *Virchow's Arch.*, Bd. cxxxiii, p. 125, 1896.
21. Beadle. *Trans. Path. Soc.*, vol. xlvii, p. 69.
22. Mayo. *Keen's Surgery*, vol. iii, p. 966.
23. Sherrill. *Annals of Surg.*, Dec., 1906.

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### THREE YEARS OF GYNECOLOGY AND OBSTETRICS IN THE UNITED STATES.\*

BY

J. WESLEY BOVEE, M. D.,

Professor of Gynecology, George Washington University, Washington, D C.

*To the President and Delegates of the Sixteenth International  
Medical Congress:*

As official delegate from the American Gynecological Society to this notable Congress of the world's great and noblest army, the searchers of scientific medical knowledge and wisdom, I have been asked to present to you a brief resumé of the part my country has been taking in this effort to gain increased knowledge in medical science. My story will be limited to two subjects, viz., Gynecology and Obstetrics. As the study of medicine has progressed, the interesting subjects in the work have remarkably increased in number. Necessarily, I cannot in this presentation give consideration to all of even the most important

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ones. Neither will I be able to minutely discuss any one of them. I shall mention new thoughts in regard to diseased states and their treatment. Nor will I be able to refer to all this work done during the three years that have elapsed since the fifteenth International Medical Congress, as the younger workers in America are imbued with a progressive spirit characteristic of the country and have done much work. I sincerely hope I will not be charged with partiality or bias in my not mentioning some of this work.

I may safely state that conservative treatment of infections of the uterine appendages has received a vast amount of consideration. Barrett(1) and others have called attention to the fact that inflammation of infected appendages is a result of nature's resistance to infectious invasion, and therefore not a reason for early operation in such conditions. F. F. Simpson(2) recommends months of rest in bed rather than prompt surgical operation in this class of cases, claiming that if this is done a large per cent. of them will be cured symptomatically if not anatomically. Early in suppuration of the appendages vaginal incision into the pouch of Douglas and thence into the pus collections with subsequent drainage for one to two weeks is common practice now, and in about one-half the cases a symptomatic cure is effected. In the remaining half vaginal or abdominal section is done for treatment of the crippled or imprisoned tubes and ovaries. In a vastly large proportion of cases the abdominal route is employed.

Many of our principal gynecologists do not often attempt to save portions of tubes and ovaries, believing symptomatic cure will not be secured and that further surgical treatment will be required. Manton, Brothers(3) and several others follow largely the plan of saving portions of such structures, although Brothers believes tubes containing pus should be excised. The etiological relation of such conservation of structure to ectopic pregnancy has not been fully determined. Many of the Americans believe tubes formerly infected, whether surgically treated or not, are potent causes of tubal pregnancy. Vineberg(4) has reported a case of pregnancy in the stump of an excised tube. The conservatism is not extended to the uterus if tubes and ovaries have to be sacrificed. Here removal of the uterine body is quite commonly practised, as the liability to adhesions to the uterus, to chronic leukorrheal discharge, and even hemorrhage is thought to more than counterbalance any advantages from retention of that organ plus any additional shock from the ad-

ditional traumatism. By many the belief that the ovary has an internal secretion is strong. For myself, I refuse to entertain such an opinion as so far as I am aware no structure in the body not glandular in type has been found to have a secretion. Whether or not this belief was the impelling force, we find the work done by Glass and A. P. Dudley in ovarian implantation or grafting enthusiastically pursued by Martin(5) and Morris(6). Martin reports three cases of heterotransplantation and five of homotransplantation, all of which he had done. He insists that this operation in women or the lower animals is no more dangerous if accomplished aseptically than any other small plastic operation on the appendages; that homotransplantation of ovaries will prevent the atrophy of the genitalia, which usually follows castration. He is not so confident that heterotransplantation is so reliable in this respect, nor in controlling the nervous symptoms produced by the menopause. Transplanted ovaries in abnormal locations will maintain their vitality, functionate, and prevent the ordinary sequelæ of castration. Martin says both forms of transplantation have resulted in conception in women. Morris' case was one of heteroplastic grafting of a piece of ovary from one woman to another. Four years later she was delivered of a living child. Peterson(7) has carefully studied 173 cases in his clinic and states that at least 10 per cent. of all women regularly menstruating at the time of operation will be free from the troublesome symptoms of the artificial menopause after hysterectomy with removal of the ovaries, and that the percentage of women with no symptoms after similar operations will be slightly more than doubled if some ovarian tissue be retained. The greatest percentage of suffering occurs in women operated on between the ages of forty and forty-four years, and the greater the amount of ovarian tissue conserved the more will the symptoms of the artificial menopause be mitigated. This is the accepted concept of the subject, yet but few American gynecologists believe abnormal ovarian tissue should be conserved for that purpose.

*The Relations Between the Ovaries and Uterus.*—Dael(8) believes his experiments on guinea-pigs and white rats disprove Franklin's conclusion that menstruation is caused by the secretory action of the corpus luteum. Dael concludes that double ovariectomy in the pregnant animal always interrupts during more than the first half of its duration. It is well known by gynecologists that this deduction is not confirmed by actual

experience in the human, as in woman pregnancy at various stages has thus been tested and found quite able to resist such influence.

*Operations for the Relief of Pelvic Diseases of the Insane.*—Broun,(9) in a second report of his gynecological work among women in the Manhattan State Hospital for the Insane, gives the results of his operations on 411 patients. Thirty-two abdominal operations were done for various pelvic affections. He states that "Owing to the evident complexity of the etiology that exists, even in the best circumscribed symptomatic groups, it is clear that in the general estimation of the value of surgical interference, it must be regarded as a procedure ranking with our other therapeutic measures which aim to get the patient as quickly as possible into a condition of bodily comfort and physical vigor." He thinks the importance of early operation and treatment is indicated by the proportional improvement, it being for the first six months of insanity, 58 per cent.; for the second like period, 33 per cent., and for the third, 26 per cent. Manton, in his address as chairman of the section on gynecology and obstetrics of the American Medical Association at its meeting in June, 1909, is more sanguine than Broun, and his work has extended over a period of twenty years. Clearly this is a work productive of great benefit to insane women.

*Adenomyomata Uteri.*—Cullen(10) reports twenty-two cases of adenomyoma uteri and states that 5 per cent. of all myomata he has examined have proven to be of this character. This statement will no doubt surprise the gynecologists that do not microscopically examine uterine growths. These growths, containing gland elements and myomatous tissue, form a distinct type of neoplasm that is easily recognized microscopically. The mucosa is always smooth and has an intact epithelium. The glands appear normal, but the stroma of the mucosa is often edematous or rarefied. The diffuse thickening in the uterine wall consists of the characteristic myomatous tissue, but the muscle bundles are much more interlaced than in the ordinary myoma. Along the border of the growth the myomatous cells gradually blend into the muscle cells. Usually the mucosa is not encroached upon, but, on the contrary, is seen to have prolongations or even isolated portions ("islands") in the myomatous tissue. Although associated with carcinoma of the cervix and body of the uterus in five of the seventy-three specimens he has examined, he considers them benign in character, and Welch has

termed them "adenomyoma diffusum benignum." In a tumor of this variety, I removed a few months ago, the interior was the site of columnar-celled carcinoma. But a careful subsequent examination revealed the presence of a stalk of the disease extending from the endometrium into the center of the neoplasm. This latter fact somewhat lessens the force of the metaplastic theory of cancer formation as suggested by Adami.

*Fibromyoma Uteri and Anemia.*—It has for several years been the custom in America to estimate the hemoglobin percentage before operation for uterine fibroids. If the percentage was found to be below fifty and no alarming complication other than hemorrhage present an attempt was made to increase it before performing the operation. If the symptoms or complications indicated the necessity for haste it was done in spite of the low hemoglobin percentage. It has also been observed that embolism and thrombosis has been alarmingly frequent during the convalescence from such operations and, although to a less extent, even before operation. Schenck(11) believes the anemia in such cases is a potent cause of that postoperative complication and that no given hemoglobin percentage should be considered a minimum.

*Uretero-cystostomy.*—Payne(12) in performing this operation loosened and depressed the corresponding kidney to lessen the tension on the point of anastomosis. After animal experimentation I found this treatment feasible and tacitly recommended it(13) to the American Gynecological Society. So far as I know, Payne is the first to perform the operation on the human and he reports it as having been successful. Whether the altered position of the kidney will cause circulatory changes that will lead to structural changes in that organ remains to be demonstrated. Sampson(14) has shown the dangers of tension at the new ureterovesical junction.

*The Treatment of Retrodisplacements of the Uterus.*—Retrodisplacements of the uterus has continued to be a subject of much speculation, more particularly in its etiology and treatment. In a general way I may say that aside from traumatism and abnormal anatomical development of the structures adjacent to the uterus, such agents as habitual constipation, habitual urinary retention, adhesions to it or to the appendages, and the presence of various neoplasms, which act mechanically, the backward displacements are regarded as only a feature of splanchnoptosis. By several of our leading gynecologists ef-

forts are made toward correcting the general peritoneal condition rather than the local uterine displacement, and for the local condition in this class of cases when it indicates surgical treatment, various operations upon the supporting structures of that organ are done rather than suturing it to the abdominal wall. The latter mentioned procedure is probably to be used only in the patients known to be sterile. Whether retrodisplacement of the uterus, *per se*, is a condition of sufficient import to justify imperiling a woman to the extent of opening the peritoneal cavity has not been decided affirmatively.

*Prolapse of the Uterus and Other Female Genital Organs.*—Considerable interest in the treatment of prolapse of the various pelvic organs of women is generally manifested. These are nearly always of traumatic origin, and relief requires redress to surgery. Ward(15) has given careful consideration of ovarian prolapse, suggesting the treatment is essentially surgical and in most instances requiring shortening of the infundibulo-pelvic and ovarian ligaments. He expresses a preference for Barrow's modification of Imlach's operation, which consists in shortening those ligaments and drawing the ovary through a button-hole made in the broad ligament above the round one. Dudley(16) recommends an operation for uterine prolapse and cystocele that consists in severing the anterior vaginal wall from the uterus, and the lower two-thirds of each broad ligament from it with suturing of the two stumps of them together in front of the cervix and bringing the vaginal flap over them. If cystocele be present he removes a median section of this flap. Watkins(17), in a paper read before the American Gynecological Society, April, 1909, recommends an operation for marked prolapse of the uterus and bladder, which consists of separating the uterus from all structures in front of it and the bladder from the vagina which is split from the cervix to the urethra. The Fallopian tubes are severed from the uterus and the body of the latter organ brought below the bladder and sutured there. Polk, at the same meeting, described an operation for exaggerated cystocele, which consisted of making a suprapubic incision and through it separating and elevating the bladder. Then the fascia from both sides are brought together and sutured under the bladder. C. P. Noble(18), regarding cystocele as a hernia of the bladder into or through the vaginal opening and as a part of a complex condition consisting of a laceration of the sacral segment of the pelvic floor with prolapse of the anterior and poste-

rior vaginal walls and of the uterus, practises an operation for relief, the essential features of which are curettage, amputation of the cervix, when necessary; a longitudinal incision in the anterior vaginal wall through which the bladder is widely separated from the uterus and the redundant vaginal wall is subjected to an oval resection. The vaginal flaps are then sutured together and to the bladder and uterus. Gilliam(19) for cystocele recommends an operation that varies from any of these by less dissection above the vaginal wall but overlapping laterally the fascia in that wall.

*Pressure Conditions Within the Abdomen.*—R. R. Smith(20) has been investigating experimentally this subject and has concluded, first, that atmospheric pressure within and without the abdomen is almost exactly balanced, any variation at any point being caused by factors to be enumerated. There is no special universal positive pressure which has so frequently been assumed. Physiological increase or decrease of volume is attended by insignificant or no changes in pressure—that is, the balance is practically maintained. A marked increase of volume from pathologic conditions often takes place without disturbing the balance, though varying in different subjects. Second, hydrostatic pressure at any point within the abdomen varies with the position of the body and the depth of the superimposed organs. Third, negative pressure at uppermost points is possible under certain conditions where the walls of such uppermost points are rigid. In the upper part of the abdomen when the position of the body is upright, a negative pressure may exist, which has more or less to do with the support of the viscera. Smith found that intraabdominal pressure from coughing, sneezing, defecation, labor, and many movements of the body is transmitted in all directions and without diminution to every part of the contents and interior of the abdomen. So far as it goes it is evidence only to a slight degree of the existence of a so-called constant intraabdominal pressure downward upon the uterus and appendages.

*The Influence of Corsets and High-heeled Shoes on the Symptoms of Pelvic and Static Disorders.*—Of great interest to the gynecologist is the work done by Reynolds and Lovett(21) and described by them at the April, 1909, meeting of the American Gynecological Society. They have reached a plan for ascertaining automatically the center of gravity of the living human body at all times and in all attitudes. They believe abdominal ptoses are

frequently the result of static conditions, and therefore if such conditions are not rectified therapeutic failure is apt to follow surgical operations done for the relief of such ptoses. But, as faulty static conditions are sometimes results of pelvic conditions, such as inflamed and adherent appendages or uterine fibroids, it is plain that such conditions must receive proper treatment. They have found a properly fitting corset does not carry the center of gravity forward while a badly fitting one does so carry it. The high-heeled shoe, with the heel placed in the middle of the foot, as practically all of them are placed, does not, in the presence of a properly fitted corset, throw the center of gravity forward, so that, while such shoes are harmful to the feet, they are not injurious to the back or viscera of a properly corsetted woman. They have found that static backache is usually relieved by proper corsets, and this effect is attributed partly to the splinting of over-strained and irritable muscles and partly to the tipping back of the whole body. Reynolds and Lovett state that "so far as their observations have gone they believe the most frequent cause of static backache is to be found in a center of gravity too far forward, thus inducing excessive muscular effect in the lower back to maintain equilibrium; and the relief of such backache by proper corsets, and occasionally by high-heeled shoes, is explained by their influence on the position of the center of gravity." I believe this work is of far-reaching value and will greatly assist in determining logical treatment in pelvic displacements as well as spinal and dorsal affections.

*The Prevention of Postoperative Abdominal Adhesions.*—During the past three years considerable attention has been given to preventive treatment of various troublesome sequelæ of abdominal and pelvic operations. Blake(22), after animal experimentation, offers the opinion that adhesions thus caused can to a moderate degree be prevented by the harmless plan of putting into the peritoneal cavity one to four drams of absolutely sterile oil. Gellhorn(23) employed lanolin unsuccessfully. Webster(24) and Byford(25) believe the most successful plan is to improve the operative technic by handling the peritoneum less and leave the smallest possible area of denuded peritoneum. It seems more than probable that these contentions of Webster and Byford comprise about all, with our present knowledge, we can do to prevent these adhesions.

*Shortening the Period of Postoperative Rest in Bed.*—Boldt(26),

following the practice and plan of Ries, advocates keeping patients after operations, particularly abdominal, in bed but a few days. The abdomen is immobilized by zinc oxide plaster in strips six inches in width applied in the form of a Scultetus bandage and the patient allowed to remain in bed but one to three days after operation. A few abdominal surgeons follow this plan quite faithfully, while a larger number have shortened the period of postoperative rest in bed to eight to ten days and using no special immobilization plan. The advocates of early postoperative rising claim as an affirmative argument, that early rising markedly lessens the danger of phlebitis, embolism, and thrombosis. Frederick(27) claims patients should be kept in bed after operation for sixteen to twenty-one days, as complete union in the abdominal wall requires two weeks and that usually exhaustion from the former disease and operation require a longer rest. Frederick's position is regarded as being the logical one. In this connection Pfaff's article(28) entitled "Phlebitis Following Abdominal Operation" is of interest. He states phlebitis occurs in 2 per cent. of all abdominal operations, and that in many instances it is merely an extensive aseptic blood clot, but that generally it receives a mild form of infection introduced into the wound at the time of the operation and in turn invades the walls of the vein. Other conditions, he holds, such as an abnormal plasticity of the blood and stagnation of the blood current be present in order that thrombosis may be the result of surgical traumatism. These points have been utilized by him as a basis for recommending the shortening of the post-operative period in bed.

*Artificial Vagina.*—J. F. Baldwin(29) has devised an operation for making an artificial vagina in cases of congenital or acquired absence of that organ. His plan is to utilize a portion of the sigmoid flexure of the colon or a loop of the ileum for this purpose. In the one operation he did the ileum was used. He first opened the abdomen and made from above a vagina; next, catching a loop of the intestine in a clamp inserted from the vagina, it is dragged downward to the skin of the perineum. The upper ends of the loop are cut off and leaving its mesentery intact to insure a good blood supply, the continuity of the intestinal tract was made by end-to-end anastomosis. One end of the isolated loop is sutured about the site of the servix uteri (the uterus was removed) and the other end of it was closed. Next the loop was opened below and the cut edges sutured to the

skin of the perineum. At the end of six weeks the resulting double vagina was made single by means of a pressure clamp. Whether the resulting condition can withstand the test of pregnancy and labor has not, so far as I know, been determined.

*Spinal Anesthesia.*—Spinal anesthesia has fallen into disrepute in America. Reynolds(30) reports a case of sudden death from it, and others have recorded fatal results from its employment. Newell(31) extols its use in labor, his conclusions being based upon 123 cases he personally conducted.

*Perineorrhaphy.*—The surgical treatment of perineal injuries has for a quarter of a century been a field for many explorers who have received a stimulus from studies of the complex mechanical conditions present in the perineum, particularly after injury. In the United States the past three years have been no exception, and as a result many gynecologists have devised new operations or modified old ones of perineorrhaphy. It is not fitting that all these should be here mentioned, and I will refer to but one. Watkins(32) claims as advantages for his operation that the external sutures are all distant, one-half inch or more, from the anus and consequently minimize the danger of infection; that the skin and connective tissue about the anus are not constricted; that the muscle is sutured individually; that no danger of subsequent recto-vaginal fistula exists, and that a relatively slight amount of suffering follows the operation. Studdiford(33) claims to demonstrate the presence of involuntary muscle fibers in the perineum. The influence this discovery may have on our knowledge of the functions of the perineum and its repair cannot now be estimated.

#### OBSTETRICS.

The advance in obstetrics during the past three years has been very notable. Cragin(34) states these advances have been in the directions of, first, a better knowledge of obstetric pathology; second, a better knowledge of the mechanical problem of delivery; and third, a better procedure. Newell(35) considers the subject of "The Effect of Overcivilization on Maternity" and insists a new type of women, considered physically, is the outcome of subjecting young girls to the many exactions incident to the training or so-called fitting for social position. The indoor life and nerve-tension prevents their physical perfection for maternity, and this clearly demonstrated when that function is in progress. He indorses the recommendation of Reynolds(36) and Davis(37)

that delicate nervous women had better be delivered by Cesarean section than be subjected to the ordeal of labor.

*Contractions of the Pelvic Outlet.*—Contractions of the pelvic outlet have not been accorded the importance they deserve, and Williams(38), from two unpleasant experiences resulting from this deformity, was led to carefully measure the pelvic outlet in the 1,200 patients in the obstetric service of Johns Hopkins Hospital. He has divided these contractions into groups, viz., typical, generally contracted, and complicated funnel pelves. In the first type the superior strait is essentially normal, while the inferior is contracted, the narrowing occurring in either the antero-posterior or transverse diameter, or in both simultaneously, as described by Schanta. In the generally contracted variety, the entire pelvis is smaller than normal, while the inferior strait is narrowed to a greater extent than is usual in typical justo-minor pelves. In the third group are included a small number of flat or rachitic pelves, in which the outlet contraction is superadded to the typical deformity. He has limited the term contracted to those cases in which the transverse diameter of the outlet is reduced to or below 8 cm. or the distance between the lower margin of the symphysis and the tip of the sacrum falls below 9 cm. He found 122, falling within this category, of the 1,200 examined; eighty-three of these were typical funnel pelves (6.92 per cent.), thirty-four generally contracted funnel pelves (2.83 per cent.), three generally contracted rachitic funnel pelves (0.25 per cent.) and two flat rachitic funnel pelves (0.17 per cent.). Klein believed a definite estimate of the capacity of pelvic outlet contractions could be made by considering the outlet as two triangles, the base of each of which was a line drawn between the ischial tuberosities and the apices of them being at the anterior margin of the tip of the sacrum and at the lower margin of the symphysis. An antero-posterior line that bisected these two triangles was termed for them anterior and posterior sagittal diameters. Williams offers some interesting data based upon the application of the measurements of these diameters to the 1,200 pelves examined. Of the sixty-nine cases of typical funnel pelves available for study it is found that the outlet contraction, *per se*, necessitated operative intervention in eleven instances (16 per cent.)—ten low forceps and one pubiotomy. In the twenty-nine cases of generally contracted funnel pelvis delivered at full term, operative intervention was necessary for the contraction in four of them (14 per cent.). His

conclusion drawn from his experience in these 1,200 cases are:

1. Funnel-shaped pelves frequently give rise to more or less serious dystocia, are an important factor in the causation of deep perineal tears, and occasionally convert what promise to be easy low forceps deliveries into most difficult and dangerous operations.
2. Typical funnel pelves, in which the usual external measurements as well as those of the superior strait are normal, while the distance between the ischial tuberosities measures 8 cm., or less, were observed in 6.92 per cent. of 1,200 consecutive pregnant women, and occurred with equal frequency in both the white and black race.
3. Generally contracted funnel pelves, in which shortening of the usual external measurements as well as of the diameters of the superior strait is associated with a distance of 8 cm. or less between the ischial tuberosities, occurred in 1.19 per cent. of the white and 4.91 per cent. of the colored women, being four times more frequent in the latter.
4. Typical funnel pelves constituted 55.7 per cent. of all cases of pelvis deformity in white, as compared with 17.8 per cent. in colored women, and therefore are of especial practical importance in the former.
5. While a shortening of the transverse diameter of the outlet to 8 cm., or less, indicates the existence of a funnel pelvis, it should be regarded merely as a danger signal; as the possibility of dystocia will depend upon the relation between its length and that of the posterior sagittal diameter. The latter is the distance from the center of the former to the tip of the sacrum, and must increase in length as the transverse diameter becomes shortened.
6. Typical funnel pelves are apparently due to the presence of six vertebræ in the sacrum—so-called high assimilation, which so changes the relations at the sacro-iliac joints as to permit the lower portions of the innominate bones to approach one another. In the generally contracted type the outlet contraction probably represents only an exaggeration of the faulty development which characterizes the entire pelvis.
7. In view of the frequent occurrence of funnel pelves, palpation of the pubic arch should form an integral part of the examination of every pregnant woman. Whenever it appears to be narrowed, the distance between the tubera ischii should be measured, and when it is 8 cm., or less, the length of the anterior and posterior sagittal diameters should also be determined. Only by so doing can one avoid being occasionally placed in the unenviable predicament of being obliged to resort to a serious obstetrical operation after having assured the patient that her pelvis was

normal. 8. Fortunately the great majority of labors complicated by funnel pelves end spontaneously. In the lesser degree of contraction low forceps may give satisfactory results, while in the more pronounced cases the operation of choice is Cesarean section at the end of pregnancy, or pubiotomy after the head has reached the pelvic floor. It is quite evident that more thorough pelvimetry and its study in conjunction with the puerperal histories will furnish data for a revision of our ideas as to diagnosis, prognosis, and treatment of pregnancy.

*The Effects of Ventrosuspension of the Uterus on Pregnancy and Labor.*—E. B. Cragin(39) has found maldevelopment of the uterus during pregnancy as a result of limitation of the mobility of that organ after the ventrosuspension operation has been performed. These deformities lead to dystocia not infrequently. He says the most common forms of dystocia thus produced are: 1. A malpresentation of the child, especially a transverse presentation which was noted in fifteen of twenty-one cases of Cesarean section for this condition collected by Lynch(40) and occurred in all five of the cases operated on by Cragin. 2. An ineffectual labor with the cervix undilated and high up. This high position of the cervix is noted in most of the cases demanding Cesarean section. 3. An obstructed labor, the obstruction being produced by the thickened anterior wall of the uterus. Cragin says ventrosuspension which allows a normal delivery in the first pregnancy following operation may subsequently become a ventrofixation and produce dystocia so marked as to positively indicate Cesarean section in the next labor. J. Whitridge Williams(41) reports his experience with the treatment of dystocia from ventrosuspension of the uterus, and states that while he does not think the operation is always a bad one yet he believes it should only be done during fertility by experts, as when the operation is finished no one can tell whether the uterus will be fixed or suspended from the abdominal wall. Other procedures have been to a considerable degree substituted for this operation in fertile women.

*Primary Ovarian Pregnancy.*—Norris and Mitchell report a case of primary ovarian pregnancy(42) and, added to several others reported in this country during the past few years, makes quite an array for America. J. C. Webster is probably the only one to report two cases, and it is unique that both his cases were in the practice of one physician in a small Wisconsin town. Were anyone to view those two specimens, mounted, no skepti-

cism regarding the possibility of the existence of the condition would remain.

*Primary Implantation of the Ovum in the Pelvic Peritoneum.*—Hirst and Knipe(43) have added to our knowledge of implantation of the ovum in the abnormal positions. They claim to have found an instance of this character in a woman of thirty-one years who had one child after a normal labor some months before. On operation, free blood in moderate quantity was found in Douglas' pouch. On the posterior surface of the left broad ligament was a spherical tumor, with a small orifice on its surface from which was exuding blood. The tubes, ovaries, uterus, and remainder of the broad ligaments were perfectly normal. The tumor was covered by peritoneum and contained a small embryo. Microscopical examination of the capsule found it to consist of an inner and an outer layer of fibrous connective tissue between which an extensive extravasation of blood had occurred, chorionic villi were seen protruding from the orifice.

*Treatment of Ectopic Pregnancy.*—A considerable degree of conservation in the surgical treatment of ectopic pregnancy after rupture or tubal abortion has been secured. Among the chief advocates of delay are Robb and F. F. Simpson. Robb states that the advice usually given to operate as soon as the diagnosis of ruptured tubal pregnancy is made is harmful. In many instances an experienced surgeon is not obtainable and the operation is done in an imperfect manner, and in many in which operation is done immediately the surgical shock added to that of rupture is fatal. If there are signs of improvement in the patient's condition, which he regards as always occurs, Robb keeps the patient under observation. Improvement is brought about by carefully stimulating by means of saline infusions under the breasts and in some by hot saline enemata. If nausea and vomiting are absent stimulants are given in small quantities by mouth. Morphia and strychnia are administered, and external heat with elevation of the foot of the bed are employed. During the period of time employed in thus fitting the patient to better withstand operation he is prepared to operate at any time improvement stops. Simpson follows much the same plan as does Krug. Robb, by experiments on dogs, found the utero-ovarian vessels could be severed and the consequent hemorrhage did not prove fatal. In advanced cases of ectopic pregnancy, even when the fetus is living, the long-abandoned practice of removal of the placenta at the time of operation has been adopted

by several expert abdominal surgeons, notably Werder(44). It is probable that the refined technic and great skill of many gynecologists will bring about the popularization of this plan. While treatment of the placenta in such cases has always been the *bête noir* in operating for this condition there seems to be no reason why the alarming hemorrhages incident to this procedure cannot be prevented by careful control of the blood supplying vessels.

*Pubiotomy.*—The status of pubiotomy in America is not a stable one. Fry(45) collected twenty cases done in this country, twelve primary and eight secondary, with a mortality of four—all secondary operations. Seven of the twenty were done by J. Whitridge Williams, who, the following year in an exhaustive paper read at a meeting of the American Gynecological Society(46), attempted to prove pubiotomy was a justifiable operation. His arguments were based upon his thirteen operations, in which the maternal mortality was *nil* and the fetal three, only one of which could fairly be attributed to the operation. He says the maternal mortality should be less than 2 per cent., and that the result depends much on the employed technic. He thinks it is indicated in contracted pelves in which the conjugata vera does not fall below 7 cm., and after a test of several hours in the second stage of labor has shown that the disproportion between the head and the pelvis cannot be overcome, as well as certain cases of outlet contraction. It should replace high forceps, prophylactic version, induction of labor, and craniotomy upon the living child in uninfected women. Fry, in discussing this paper, condemned the operation because of its more than 50 per cent. morbidity. Norris favored the operation, defending it similarly to Williams, but defended induced labor. Grandin prefers Cesarean section and induced labor. Hirst predicts pubiotomy will not stand the test of time. Lewis(47) condemns the operation and states his opinion that the indications for pubiotomy and symphysiotomy will become steadily narrower as time goes on. It would therefore appear that in this country, in spite of the able defense of Williams and Norris, the popularity of the operation will be of but short duration.

*The Treatment of Placenta Previa.*—Newell(48) believes the older methods promptly applied should give practically no maternal mortality in complete placenta previa, and that the fetal mortality of 60 to 65 per cent. will scarcely be lowered by either vaginal or abdominal Cesarean section. He refers to the

advocacy of abdominal Cesarean section by skilled abdominal surgeons but not by skilled obstetricians. Grandin(49) limits abdominal Cesarean section to cases in which the fetus is visible, the mother in splendid condition, the cervix rigid or cicatricial, or dystocia, due either to fetus or pelvis present. Jewett's paper read at the same meeting of the American Gynecological Society as the two above quoted endorsed the position taken by Newell and Grandin. Fry, also, at the same meeting made an earnest plea for the obstetrical treatment of placenta previa. H. A. Miller,(50) of Pittsburg, ligated the uterine arteries for placenta previa in eleven cases. Two died from delivering without waiting until shock had been combated. He claims it effectually controls hemorrhage from the placental site, but admits the fetal mortality is likely to be increased by early cutting off its blood supply.

*Glycosuria in Pregnant Women.*—J. Whitridge Williams, (51) with the title of "The Clinical Significance of Glycosuria in Pregnant Women," has recorded his personal experience with this complication of pregnancy. In the urinary records of 3,000 obstetric patients he found sugar was demonstrated by the Fehling solution test in 167 during pregnancy, labor, and the puerperium. During pregnancy there were twenty-four; during the puerperium, 137 cases, and in both, six cases. He does not regard the Fehling's solution test as sufficient as the glycosuria, may be due to the presence of lactose which is harmless; if to glucose the prognosis may or may not be bad. Williams advises the use of the fermentation test to differentiate between the two conditions. The lactosuria he regards as being harmless. He states we must not disregard the fact that diabetes may begin in the pregnant women, and that a diabetic woman may become pregnant. Transient, alimentary glycosuria may occur. After isolating the glucose the variety must be determined. If alimentary, it may be regarded with impunity. If it occurs late in pregnancy and does not exceed 2 per cent. in amount and is not accompanied by symptoms, it is probably transient and may disappear at any time or persist until the end of pregnancy; in either event being of little moment. If sugar occurs early in pregnancy and in large amounts it is a dangerous condition. Pregnancy occurring during diabetes or *vice versa* is a serious complication. If the output of sugar is large and not controllable, induced abortion or labor is positively indicated even in the absence of symptoms.

*Perforative Appendicitis Complicating Pregnancy.*—Appendici-

tis complicating pregnancy has been a subject carefully considered in America, where the surgical treatment of that disease is in vogue. Babler's paper(52) is a good presentation of the subject from the obstetrical standpoint. He reports a collection of 103 cases of perforative appendicitis complicating pregnancy. The etiology of the disorder in pregnancy does not differ from that in nonpregnant patients. Three-fourths of the cases develop after the third month of pregnancy. Perforation occurred in 44.6 per cent. of cases. Portal infection rarely follows. The uterus may become infected through the peritoneum, through the lymph and blood-vessels, or through adhesions from the abscess wall to the pelvic organs. In many cases the pregnant uterus forms a part of the abscess wall. Rupture of the abscess follows contraction of the uterus and expulsion of the fetus. In some cases abscess of the appendix may form an obstacle to delivery. Diagnosis is usually made without difficulty, although in some cases ruptured tubal gestation may be confused with appendicitis. When perforation occurs, the mother's mortality averages 48.5 per cent., the fetal mortality 66 per cent. In the 103 perforative cases collected, operation was performed in eighty-nine, followed by abortion in thirty-seven; thirty-six mothers died. There were fourteen perforative cases treated medically, all of which died; ten of these aborted, and in ten the child died *in utero*, making a maternal mortality of 100 per cent. and an infant mortality of 75 per cent. Of the 104 nonperforative cases, fifty were operated upon, seven aborted, one mother died. Of the fifty-four not operated upon, six aborted, four mothers died. During the first ten days of the puerperal period twenty-eight cases of appendicitis were collected, of which eighteen were perforative; twelve of these women were operated upon, with a mortality of 33.3 per cent.; two of the six not operated upon recovered by accident: the pus burrowed into the rectum. Nine cases were nonperforative, all of which recovered, whether treated by operation or not.

So far as treatment is concerned, these statistics strikingly emphasize the fact that operation offers the only hope of success. Operation must be done as early as possible. With perforation and localized abscess, incision and free drainage are indicated. If possible, the uterus should not be emptied before the operation, lest the diminution in its size rupture the wall of the abscess, causing pus to enter the general peritoneal cavity. If the patient has general peritonitis, incision and drainage, without

disturbing the pregnancy, are indicated in early gestation. When the patient is near term the operator must decide between Cesarean section or forcible extraction of the child followed by abdominal incision and drainage. The treatment of suppurative peritonitis is indicated in a general way.

*Toxemias of Pregnancy.*—I would not be treating justly the obstetricians of America were I to not mention here their great and enthusiastic pursuit of knowledge of the toxemias of pregnancy. Williams has devoted much time and study to this subject. In reference to serious vomiting of pregnancy he classifies it into 1, reflex; 2, neurotic, and 3, toxemic. In the first the condition is apparently associated with some distinct abnormality of the generative tract, such as the existence of a retroflexed pregnant uterus or an ovarian tumor, and is promptly relieved by proper treatment. In the neurotic group the vomiting is a manifestation of a neurosis, somewhat allied to hysteria, and can be cured by suggestion, provided it is properly applied by one who is confident of his premises. The toxemic variety, on the other hand, is the most serious disease and is a manifestation of a profound disturbance of metabolism. In cases which go to autopsy profound lesions of the liver are noted, analogous to those observed in acute yellow atrophy. In this Williams is well supported by Norris, Welch, and others. The ammonia coefficient of the urine is found to be greatly increased from the normal 3 to 5 per cent. up to such enormous outputs as from 30 to 46 per cent. Albumin and casts are not present until the terminal stages. Williams believes this increase in the ammonia coefficient affords a most valuable means of differentiation between the toxic and other varieties, and that the liver changes are not primary; but the result of a profound disturbance in metabolism concerning the origin of which we are ignorant. For three years he has been studying metabolism with a view to discovering the nature of these changes. Davis, Edsall, and Hirst are inclined to doubt the correctness of Williams' deductions. Nevertheless, they are growing in favor.

#### BIBLIOGRAPHY.

1. *Ann. Gyn. and Ped.*, 1907, xx, 488.
2. *Gyn. Trans.*, 1909.
3. *J. Am. Med. Assoc.*, 1908, 1, 595.
4. *AMER. JOUR. OBST.*, 1908, lvii, 527.
5. *Surg. Gyn. and Obst.*, 1908, vii, 7.
6. *AMER. JOUR. OBST.*, 1906, liv, 131.

7. AMER. JOUR. OBST., 1908, lvii, 633.
8. *Surg. Gyn. and Obst.*, 1908, vi, 153.
9. AMER. JOUR. OBST., 1908, lviii, 87.
10. *J. Am. Med. Assoc.*, 1908, l, 107.
11. *J. Am. Med. Assoc.*, 1908, li, 1395.
12. *J. Am. Med. Assoc.*, 1908, li, 1321.
13. *Gyn. Trans.*, 1897, xxii, 289.
14. *Surg. Gyn. and Obst.*, 1909, viii, 479.
15. *J. Am. Med. Assoc.*, 1907, xlix, 1507.
16. *J. Am. Med. Assoc.*, 1906, xlvii, 1605.
17. *Gyn. Trans.*, 1909.
18. *J. Am. Med. Assoc.*, 1907, xlix, 1982.
19. *J. Am. Med. Assoc.*, 1907, xlix, 1984.
20. AMER. JOUR. OBST., 1908, lviii, 242.
21. *Surg. Gyn. and Obst.*, 1909, viii, 569.
22. *Surg. Gyn. and Obst.*, 1908, vi, 667.
23. *Surg. Gyn. and Obst.*, 1909, viii, 505.
24. *Surg. Gyn. and Obst.*, 1909, viii, 574.
25. *Surg. Gyn. and Obst.*, 1909, viii, 576.
26. *Trans. S. Surg. and Gyn. Assoc.*, 1906, xix, 122.
27. *J. Am. Med. Assoc.*, 1908, li, 834.
28. AMER. JOUR. OBST., 1907, lvi, 630.
29. AMER. JOUR. OBST., 1907, lvi, 636.
30. AMER. JOUR. OBST., 1909, lx, 78.
31. *Surg. Gyn. and Obst.*, 1907, v, 153.
32. *Surg. Gyn. and Obst.*, 1908, vii, 1.
33. AMER. JOUR. OBST., 1909, lx, 23.
34. AMER. JOUR. OBST., 1908, lviii, 305.
35. *Am. J. Med. Sci.*, 1908, cxxxvi, 532.
36. *Gyn. Trans.*, 1907, xxxii, 43.
37. *Gyn. Trans.*, 1907, xxxii, 82.
38. *Surg. Gyn. and Obst.*, 1909, viii, 619.
39. *Surg. Gyn. and Obst.*, 1908, vii, 45.
40. *Johns Hopkins Hosp. Bull.*, 1904, 162.
41. *Trans. S. Surg. and Gyn. Assoc.*, 1906, xix, 237.
42. *Surg. Gyn. and Obst.*, 1908, vi, 460.
43. *Surg. Gyn. and Obst.*, 1908, vii, 456.
44. AMER. JOUR. OBST., 1908, lviii, 796.
45. *Surg. Gyn. and Obst.*, 1907, v, 156.
46. *Gyn. Trans.*, 1908, xxxiii, 336.
47. *Surg. Gyn. and Obst.*, 1908, vi, 191.
48. *Surg. Gyn. and Obst.*, 1909, viii, 468.
49. *Surg. Gyn. and Obst.*, 1909, viii, 529.
50. *Am. J. Surg.*, January, 1909.
51. *Am. J. Med. Sci.*, 1909, cxxxvii, 1.
52. *J. Am. Med. Assoc.*, 1908, li, 1310.

## CLIMACTERIC HEMORRHAGES.\*

BY

JAMES ROBERT GOODALL, B. A., M. D., C. M.,

Associate in Gynecology at Royal Victoria Hospital, Montreal; Demonstrator of Gynecology at McGill University, Montreal.

My subject for this paper has been entitled "Climacteric Hemorrhages." Loosely taken, it might be thought to include all the diseases which lead to unnatural hemorrhages at the time when menopause might be expected. Strictly speaking, it applies only to that disease which makes itself manifest at the climacterium and is known under the varied nomenclature of chronic metritis, fibrosis uteri, fibroid uterus, hypertrophied uterus, hemorrhagia myopathica, etc., etc.

It is with the subject in this restricted sense that I wish to deal to-night. It is one that has interested me for years, one upon which I have spent a few years of research in the hope of eventually finding a truly scientific and plausible explanation for its obscure etiology and symptomatology. It is to this that most of my paper will necessarily be devoted, and I trust, Mr. President and gentlemen, that you will pardon me, if at times portions of my paper may take on something of the nature of the didactic.

There is probably no disease in gynecology that is so little understood, both by general practitioner and gynecologist, as that of chronic metritis. The reason perhaps lies in the fact that clinically it is difficult of diagnosis and that many text-books omit it completely. In the first five recent text-books that came to hand a few days ago three made no reference to it whatever, one but a short note, and the fifth dealt with the subject at some length. From this it must not be inferred that the disease is an uncommon one; on the contrary, it is in my opinion the most common cause of intractable hemorrhage at menopause, not even excepting cancer. Last Monday four such cases came under my notice at the out-patient department of the Royal Victoria Hospital.

Let me begin by asking the question, What is chronic metritis? It is a disease of the uterus that makes itself manifest at the time when menopause should set in; hence it begins usually between the ages of thirty-five and forty-five years. It is

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characterized by but one pronounced symptom—hemorrhage—excessive, often jeopardizing the life of the patient, and intractable to all therapeutic measures. It occurs in parous woman and on physical examination the characteristic signs are an enlarged, indurated uterus.

Before taking up the subject in detail, I would like to pass in short review the views of previous authors. In this way a better grasp of the salient points of the disease and of the details which have been the cause of so many different tenets will be afforded. The first scientific work to appear upon chronic metritis was the monograph by Scanzoni(1) in 1860. Scanzoni contended that the disease was always secondary to acute infection. Hence he recognizes two stages in the progress of the pathological process, namely, the infiltrated, soft, edematous stage and the indurative stage. The first is a necessary antecedent of the second. I cannot better compare his views than by saying that his stages are like those in acute and chronic inflammation of all other organs. He himself compares the process with hypertrophic and atrophic cirrhosis of the liver. In 1867 Seifert(2) and later his pupils called the writings of Scanzoni into question and contended that subinvolution of the uterus is the chief factor in the production of chronic metritis. Writers up to this time had drawn their conclusions from naked-eye examinations of their specimens, but in 1868 the microscope, though with low magnifying powers, began to be widely used. The chief subject of debate during the next few years was what tissue was responsible for the considerable hypertrophy of the uterine wall as found in chronic metritis. Finn(3) and later von Klebs(4) found that the size was due chiefly to muscular hypertrophy. Birsch-Hirschfeld,(5) on the other hand, contended that it was due to a marked hyperplasia and hypertrophy of both muscle and connective tissue. Of course there was still another view possible, that the enlargement was a true fibrosis, and it was not long before strong advocates were found in von Klob,(6) Kiwisch,(7) and Virchow.(8)

In 1870 Olshausen(9) began to show the great therapeutic value of the curette in cases of menorrhagia and metrorrhagia, and with it began the careful microscopical examination of the endometrium obtained by this means. The result was that the interest of the gynecological world was centered upon the endometrium, and its pathological changes were held responsible for all unnatural hemorrhages.

The pendulum had to seek its level, and in 1888, just twenty years after the last work, Cornil<sup>(10)</sup> laid stress upon the fact that there were cases that resisted the curette, hemorrhage continues in spite of all treatment, and that in such cases he found the arteries of the uterus sclerosed and there was a true fibrosis of the uterine wall. Ten years later the most scientific paper published up to that time appeared from the pen of Reinicke, in which he points out for the first time that there is a primary chronic metritis characterized by fibrosis of the uterine wall without any signs of inflammation either in the uterine wall or in the endometrium.

And so the polemic has gone on to the present day. In the last three years a revival of interest has taken place without, however, being productive of much elucidation.

Let me now take up at some length the pathology of chronic metritis, together with its etiology. In a paper by Dr. Gardner and myself,<sup>(11)</sup> read before the British Medical Association, we divided cases of chronic metritis into two distinct classes: First, simple, or uncomplicated chronic metritis, and, second, complicated chronic metritis.

To this division I would strictly adhere as it offers great advantages both clinically and pathologically.

In simple uncomplicated metritis, the uterus is symmetrically enlarged and indurated, but the uterus is the only pelvic organ appreciably affected, whereas in complicated metritis various associated lesions of the adnexa, parametrium, and perimetrium coexist with the metritis, and in all likelihood have sprung from the same causal agent.

If we now examine uteri excised for uncontrollable hemorrhage at menopause, we find that the organ has retained its normal outline but is considerably larger than normal. The degree of enlargement is very variable, but is always above the normal size. The largest specimen that has come under my notice measured four inches in depth, three and three-eighths in breadth, and two and three-quarter inches in thickness. In simple cases the peritoneal surface is normal. The cervix is usually proportionately enlarged and usually contains many Nabothian cysts. The body is more globular than normal owing to the great thickness anteroposteriorly. On section, the cut surface is pale, anemic, and white, shiny strands form a dense network, in the meshes of which a darker, less shiny tissue is seen. This interlacing of strands of tissue grows more marked as one recedes

from the peritoneal surface toward the middle third of the uterine musculature, and they grow proportionately finer. In the outer third the lighter and darker strands, which we may now interpret as connective tissue and muscular tissue, respectively, tend to divide the uterine wall into layers. A thick white band of tissue is nearly always to be found underlying the whole of the peritoneal surface of the uterus. The vessels on the cut surface always project markedly above the surrounding tissues as if the tissues retracted about them or that the vessels themselves were under pressure. The mucosa may be variously affected, thickened almost to being diffuent, normal, or even atrophic. The tissues cut with greater difficulty than do those of the normal uterus.

In complicated cases various lesions of the adnexa and parametrium may be added to this pathological picture. In microscopical sections of the uterine wall, extending from mucosa to peritoneum, and stained with Weigert's elastic stain, followed by hematoxylin, and then by Van Giesen, we find the elastic tissue stained black, the muscle yellow, the fibrous tissue red, and the nuclei purple. In such a section one is struck by the large amount of elastic tissue that is present. This increase in elastic tissue is found chiefly in the middle third of the uterine wall about the large veins and arteries which abound in this region. But though widespread here, it is by no means limited to this area. The vessels of the inner third are also surrounded by a large amount of elastic tissue which by its arrangements and bizarre shapes about the vessels, seems to serve no definite purpose. The connective tissue and muscular elements do not seem to have lost their relatively normal proportions, but the muscle cells enveloped in such thick meshes of elastic tissue seem to have departed in variable degrees from their normal healthy appearance.

Heretofore uteri were not studied carefully with the Weigert stain for elastic tissue and as a consequence hyaline degeneration of muscle was a prominent pathological finding in all sections of chronic metritic cases, the reason being that sections stained with hematoxylin and eosin or with Van Giesen and hematoxylin show perivascular and extravascular masses of hyaline substance stained either pink or yellowish-pink, and sparsely dotted with nuclei. These have heretofore been invariably interpreted as hyaline degeneration of muscular tissue. These same sections if stained with Weigert's elastic tissue stain will show that this

hyaline substance is not hyaline degeneration of muscle, but is dense elastic tissue.

If we now ask the question, What is the origin of this overgrowth of elastic tissue? we ask the crucial question of this difficult subject. Let me state that the whole subject revolves about the involution of the puerperal uterus. In my opinion a woman may have an unlimited number of children and if her recoveries are complete and involution is rapid she will never suffer from chronic metritis. Chronic metritis finds its one great etiological factor in subinvolution. So the causative agents in the production of chronic metritis are numerous. Yes, just as numerous as are those which operate in bringing about subinvolution. I would like to make the statement still more emphatic and claim that every case of prolonged subinvolution will without exception pass over into chronic metritis unless treated systematically and energetically.

I have never seen a true case of chronic metritis in a virgin. By this I do not mean in a nulliparous woman, but I mean in a virgin. In the former class, *i.e.*, the nulliparous patients, repeated slight abortions may take place without amenorrhea and without the knowledge of the patient, and there is no more fruitful source of chronic metritis than abortion, just as there is no more frequent cause of septic trouble than abortion. Shaw,<sup>(12)</sup> in a paper of three years ago, says he has seen several cases in virgins and that they do not differ microscopically from those in the parous women. But we have only to note that Shaw's only stain was Van Giesen, which gives no differential staining to the elastic tissue which is the all-important structure. Granted, then, that subinvolution or defective sequelæ of pregnancy are the causative agents in chronic metritis, how can the microscopical picture be accounted for?

A triple process is at work, though when thoroughly analyzed the three resolve themselves into one. If we study a uterus undergoing involution we find that it builds for itself a complete new system of arteries throughout its whole walls during involution, and this takes place not only after the first, but after each and every pregnancy. To be more emphatic, the blood after delivery courses through an entirely new system of arteries from that through which it flowed during pregnancy. The vessels that supplied the placenta are replaced completely by a new system. The old and very large vessel which supplied the placenta atrophies and during its atrophy it builds for itself out of its

constituent elements a new and smaller vessel in its lumen. I regret that I can touch but lightly upon this interesting topic in the time allotted.(17)\* In this placental area the disproportion in size between the old and the new vessel is very great, so that the old wall lies completely outside and beyond the new one which it surrounds. In vessels which have to undergo such enormous reduction in size the changes are readily understood, whereas in the extraplacental portions of the uterus the reduction in size which the vessel must undergo is not so great, so that the old vessel may impinge in varying degrees upon the outer portion of the media of the new one that is contained within its lumen, and a portion of the media of the old vessel may be retained to form part of the muscular wall of the new one.

In the first type, that is, in the subplacental areas, the old vessel ought to undergo complete destruction and absorption, and in the extraplacental portions the old vessels will undergo varying degrees of atrophy and disappear, as much of them being retained as is necessary to complete the new vessel wall. The least resistant tissue of the old vessel to destructive processes can be abundantly shown to be the musculature, and the more resistant is the elastic tissue, and among elastic tissues the *elastica interna* of the arteries is very resistant. Now, if the involution of the uterus is rapid and normal in a young woman, both these types of tissues in the wall of the old vessel undergo rapid degeneration and absorption and leave no trace of their former existence. But if involution is slow and retarded; if chronic disease has sapped the vitality of the patient; if acute disease has supervened during the puerperium, or if the most frequent causes, sepsis and retained products, have come into operation, remarkable and far-reaching changes take place in the uterine wall. To put the matter tersely, structures that ought to have been destroyed owing to their no longer having any function to perform, remain in the various stages of degenerative change, and the rule applies with all its vigor that the most highly specialized tissues suffer the most and the less specialized the least.

But the rule has also a second application which adds a great deal to our understanding of the process, and that is that the same causative factors which inhibited the degenerative and absorptive processes also inhibit regeneration of tissue, and in the same ratio, that where the most highly specialized cannot be

\* See this Journal for December, 1909.

regenerated a less specialized can be reproduced; that is, where muscle regeneration is impossible, elastic tissue regeneration is possible. Hence it is that in chronic metritic cases the uterus contains a great deal of the old vessel wall that should have been absorbed. Its musculature has almost completely disappeared, but its elastic tissues have undergone tremendous hypertrophy. The new vessel which has been formed contains varying degrees of deficiency of muscular tissue and a corresponding degree of overgrowth of elastic. In other words, where nature cannot regenerate a highly contractile tissue like muscle it supplies the next best, namely, elastic tissue.

In the reduction of the veins a somewhat similar process is at work. Hence it is that in diseased conditions which bring about subinvolution the result is a hindrance to the normal changes which take place in the uterus, and the end-product is a large uterus containing a superabundance of muscle and fibrous tissue and a relatively very large amount of perivascular elastic tissue.

Marchand(13) and Jores(14) have clearly shown that, generally speaking, the thirty-fifth year of age marks an important turning-point in tissue regenerative powers of the individual. I would go still farther and say that, roughly speaking, the twenty-fifth year introduces a much more important turning-point. In the early years of life muscle is readily regenerated; to wit, how the heart hypertrophies and compensates in the young, but how injurious the same strenuous exercises of youth become to the athlete over twenty-five years. In children and young adolescence the arteries increase their media to meet the demands of the increasing blood pressure. At a certain time in life, roughly speaking twenty-five years, muscle regeneration becomes less active, but elastic tissue development is now in the ascendant, and at thirty-five years elastic regeneration grows less and less marked and the less specialized fibrous tissue comes into play and is found to step in where the others and more highly specialized tissues fail. To me the Jores and Marchand conception is a grand one which throws a new light upon the whole subject of arteriosclerosis. In early years of life arteries increase their strength by hypertrophy and hyperplasia of the muscular media or by repeated layers of muscle and delicate elastica interna between the intima and media. These are known as the hyperplastic layers of Jores, and take place in all arteries to meet the demands of increased blood pressure. After twenty-five

years of age regeneration of muscle becomes less and less complete, but the increase in strength of the vessel wall is now made up with increasingly greater amounts of elastic tissue, until after thirty-five years even this specialized resilient tissue is no longer producible and the less specialized fibrous tissue begins to make its presence felt. So true is this that I have found even in children of six to ten years of age who have suffered for years with chronic rheumatism and chronic nephritis, that muscle regeneration was almost at a standstill under such diseased conditions, and the strengthening of the vessel walls to meet the increased blood pressure was almost wholly by elastic tissue.

So it is with the uterus. In the normal young woman filled with the vigor of health there is complete destruction of tissues that no longer have a function to perform and a complete regeneration of muscle and a complete return to the virgin state. But how seldom the puerperium runs its course with all these favorable circumstances! In eighty uteri of parous women that I cut and examined during my work in Berlin, there were but two that had returned to such a normal state that I think even the most experienced microscopist would fail to detect the difference between them and the uteri of the virgin. If, then, complete return to the normal state is so seldom in the young woman, it is a very rare finding in the woman who bears children after thirty-five years. The older the woman the less complete is her return to the normal, and women, as men, are as old as their arteries. Hence it is that women who are predisposed to arteriosclerosis will be strongly predisposed to chronic metritis. This is quite in accordance with our experience of cases at the Royal Victoria Hospital. From this it will be readily gathered that there are two types of arterial sclerosis in the uterus, just as there are two types in the ovaries. These are a functional sclerosis and a true arteriosclerosis.

Therefore the causative agencies which produce subinvolution operate in bringing about chronic metritis. Moreover, the long-continued and hotly contested battle between the advocates of infection and those of noninfective agencies has ceased, and both sides have won their point. That the causative factor may lie in the uterus, such as retained products, puerperal infection, etc., one can readily understand; in fact, herein will lie the chief cause of subinvolution. That the active agent can also lie outside the uterus and yet be pelvic is seen in cases of tuberculosis of the adnexa; and still further, that it may be still

more remote and yet operate not through infection, but through diminished vitality or toxemia, is seen in acute as well as chronic diseases.

Many works have been produced to show—and here, gentlemen, there is unanimity of opinion; I say many works have been produced to show that acute disease supervening during the puerperium, places a “block” upon involution, and the arrest of involution will be proportionate in its completeness with the severity of the infection. That infection alone in the virgin or nullipara, be it gonorrheal or tuberculous, cannot give rise to true metritis I am fully convinced, for in my experience the uterus of a virgin or nullipara suffering from tuberculosis or gonorrhœal disease is in the first stages enlarged somewhat but is soft and edematous, but in the later stage is always small, indurated, and fibrous.

The changes in the endometrium in chronic metritis will depend, as you can readily understand, upon the source of the causative agent, whether the trouble begins in the uterus or whether it lies extrapelvic.

As to the causes of the hemorrhages, many explanations have been advanced, none of which as yet seem thoroughly adequate. Reinicke attributes this symptom to the lack of contractility of the vessel walls; Theilhaber and Meyer(15), to the lack of power of the musculature of the uterus to contract and retract and thereby arrest the hemorrhage. This weakness they attribute to the inhibitory influence of the fibrous tissue. The question is a difficult one and it seems that, from a functional point of view, to separate the uterine vessel walls from the uterine musculature is quite unjustifiable.

To me it appears that the uterine contractions and retractions play the all-important part in the arrest of hemorrhage at labor and during menstruation, otherwise the flow of blood at menstruation and after labor would be continuous instead of being intermittent. But I think also that we must assume that the thick muscular walls of the arteries have a controlling influence in arresting hemorrhages from the uterus. If we admit this, and I think we must, we must also admit that in chronic metritis, where both the arterial system is so loaded with elastic tissue and the uterine muscle fibres so inhibited by noncontractile elements, the controlling influence of both these great factors will be partially or completely lost. It would be an impossibility to even guess at the relative importance of these two controlling

factors, for no two cases need be alike: in this one the arterial system would be most at fault, in that one the vessels less and the uterine musculature more culpable.

In Dr. Gardner's and my own work we considered another important factor in the hemorrhage of chronic metritis, and that is ovarian function or ovarian secretion. Here, gentlemen, we are treading upon dangerous ground. My own modest opinion is as follows: In the milder grades of chronic metritis the hemorrhages amount to menorrhagia only; in the graver cases metrorrhagia more or less intermittent comes on; in the gravest cases metrorrhagia is constant.

In all cases the organ at fault is the uterus. I mean the uterus broadly speaking, not limiting the meaning to either musculature or vessels. In the milder cases, where the loss of blood amounts only to an increase at menstruation, the uterus cannot control the amount of blood brought to it at the menstrual pelvic congestion when all the organs are so engorged with blood. In the graver cases of metrorrhagia the uterine walls are so diseased that hemorrhage takes place quite independent of the menstrual pelvic congestion; that is, when the blood supply to the pelvis is at its minimum. When looking over the literature, I find that where ovariectomy had been performed for the relief of chronic metritis, a certain percentage of cures takes place. It is in the milder cases that the cures are found, because the exciting cause of pelvic congestion is removed by removal of the ovaries. But when hemorrhage continues independent of menstruation—in other words, where metrorrhagia is pronounced—the result of ovariectomy was not encouraging. Hence we may sum up in a few words that the part played by the ovaries in the production of the hemorrhages of chronic metritis is simply the marked exacerbations of the hemorrhage brought about by the pelvic congestion incident to menstruation. But the cause of the unnatural discharges of blood must be sought in the uterus.

*Symptoms and Signs.*—The one prominent symptom for which these patients seek relief is hemorrhage. But let me state most emphatically that not all cases of chronic metritis are necessarily bleeders. The menstrual flow may not be disturbed in the slightest. The condition under such circumstances is generally discovered accidentally. When hemorrhage becomes a symptom, it may be a slight increase over the normal amount or it may be very profuse menorrhagia. As a rule, the increase

in the quantity of blood lost is a slowly progressive one and may pass eventually through all the stages of menorrhagia, then intermittent, and finally constant metrorrhagia. The loss of blood may be alarming and leave the patient weak and almost exsanguinated. The blood is of a very dark color and almost free from mucus. As a rule, there is no pain whatever, except possibly a slight dragging pain in the back. Leucorrhea is very variable, but, as a rule, a very minor symptom. The patients are multipara, usually between thirty-five and forty-five years of age. I have never seen hemorrhage from chronic metritis supervene once menopause had been definitely established; hence it is always before menopause. It is especially common in women who have had repeated abortions or septic puerperal troubles. I cannot pass on without a word about the frequency of chronic metritis in women who have had repeated abortions and have frequently born dead and macerated syphilitic children.

On physical examination chronic diseases of the other systems are frequently found, and especially to be mentioned are arteriosclerosis and nephritis. The perineum and vagina show signs of multiparity; the cervix is almost invariably involved in the same pathological state as that of the uterus. It is large, cartilaginous in consistence, and contains numerous Nabothian cysts. Lacerations are common. The uterine body is larger than normal and is very firm. It is nearly always markedly tender to pressure and not infrequently the whole of the genital tract is involved in this hyperalgesic state. In uncomplicated cases the uterus will be freely movable and lie in an otherwise healthy pelvis. But in complicated cases it may be associated with all degrees of chronic involvement of adnexa, périmetrium, and parametrium.

*Diagnosis.*—The disease which offers the greatest difficulty in diagnosis is the case of a submucous fibrous polypus of the uterine body, which enlarges the uterus but does not destroy its normal outline. Let the tumor be the size of a pigeon's or hen's egg and the diagnosis cannot be other than tentative until operation. Under such conditions the symptoms and physical signs are exactly alike.

From chronic endometritis it is usually distinguished by the age of the patient and by the softness of the uterus.

In cancer of the uterine body the consistence of the uterus

is not so firm; moreover, cancer of the body occurs most frequently in nulliparous patients.

From subinvolution the condition is readily differentiated by the history of recent pregnancy or abortion and by the softer consistence of the organ.

However, there will be many cases in which nothing but the curette will clear up the diagnosis, and, gentlemen, in the curette we have an infallible diagnostic means. In chronic metritis the uterine cavity is always found very capacious. The tip of the curette moves about in the uterine body as if in a large empty space. The chief diagnostic sign lies in the fact that in true chronic metritis the curette brings nothing but thin blood away, and the uterus, instead of relaxing, as the normal uterus does under the curette, presents resistant walls which are firm, and the curette gives out a rasping sound when drawn with pressure over the uterine mucosa. This, gentlemen, is without doubt the diagnostic sign of greatest value.

*Treatment.*—Treatment will resolve itself into prophylactic, palliative, and operative.

The prophylactic treatment will be directed toward the prevention or removal of all the conditions which leave the uterus in a state of subinvolution. That is, a more careful routine examination of the placentas and membranes to see that everything has come away; careful asepsis, and later a careful examination into the causes of a prolonged lochial discharge; and finally, a careful examination of patients some weeks after labor to ascertain that conditions are normal. A persistent retroversion after labor I look upon as a very frequent cause of subinvolution and later of chronic metritis. But in spite of the greatest care, in spite of ideal treatment, there will be a goodly percentage of cases develop from causes over which the physician has no control.

Palliative treatment will consist in rest, both physiological as well as physical, and the use of the various ecbolics and hemostatics. Among these may be mentioned, ergot, stypticine, ergotine, suprarenal, viscum album, and gelatin. The most I can say for these therapeutic measures is that I have seen little or no effect except that which rest alone will bring about. Massage and tonics are indicated and not infrequently return of general strength is associated with a diminution of the loss of blood.

Operative treatment may be divided into minor operative

measures and the radical cure. Inasmuch as chronic endometritis may be associated with the chronic metritis, and inasmuch as when present the diseased endometrium will tend to increase the hemorrhage, and, moreover, owing to the fact that an associated endometritis cannot be diagnosticated except by means of the curette, curettage for the relief of chronic metritis has found warm advocates. In certain types of cases doubtless the results are very great, namely, just in those cases where the endometrium is markedly hypertrophic. Shaw and Donald(16) advocate its use in all cases and claim good results. But what they call results are very doubtful results indeed. In one of my own cases, which they take as indicative of the beneficial results of curettage, the woman was worse after curettage and nearly bled to death on several occasions before a bettering of the hemorrhages took place exactly two years after curettage.

The course to be adopted will differ with the class of patients with whom we have to deal. My own feelings are that among the leisure classes the patient may be advised to undergo a curettage and repair of the cervix in the hope of an improvement of the symptoms. But the surgeon must never neglect to tell the patient that he is adopting a less severe measure in the patient's interest, but a measure that is not always followed by success. If the curette yields but a little or no endometrium the chances of improvement are indeed very slight and hysterectomy under those conditions is imperatively demanded. The results from hysterectomy are sure and satisfactory. As to whether the procedure will be abdominal or vaginal will depend entirely upon the nature of the case and the ability of the surgeon.

#### BIBLIOGRAPHY.

1. Scanzoni. Krankheiten der weiblichen Sexualorgane, Bd. i, S. 360.
2. Seifert. *Prager Vierteljahrschrift*, xxiii, 1-4, 1866.
3. Finn. *Centralblatt f. med. Wissenschaft*, 1868, S. 564.
4. v. Klebs. *Handbuch der patholog. Anatomie*.
5. Birsch-Hirschfeld. *Lehrbuch der patholog. Anatomie*.
6. v. Klob. *Path. Anatomie der weiblichen Sexualorgane*.
7. Kiwisch. *Klinische Vorträge*, 4 Aufl., i, S. 580.
8. Virchow. *Die krankhaften Geschwülste*, 1863.
9. Olshausen. *Arch. f. Gynecologie*, 1870.
10. Cornil. *Anatomie Patholog. des Metrites. Journal des Connaissances Médicales*, Juin, 1888.
11. Gardner and Goodall. *British Medical Journal*, Nov. 3, 1906.

12. Shaw. *Journal of Gyn. and Obst. of British Empire*, Feb., 1907.
13. Marchand. *Verhandlungen der Gesellschaft für Pathologie*, 1902.
14. Jores. *Wesen und Entwicklung der Arteriosclerosis*. Wiesbaden, 1903.
15. Theilhaber and Meyer. *Die Ursachen der präklimacterischen Blutungen*. *Arch. f. Gyn.*, Bd. lxii, S. 415.
16. Donald. *Jour. of Gyn. and Obst. of British Emp.*, Feb., 1907.
17. Goodall. *AMER. JOUR. OBST.* (December, 1909); *Arch. f. Gynäkologie*; Dec., 1909; *Studies from the Royal Victoria Hospital*.

## UNICORNATE AND BICORNATE UTERUS.

BY

ABRAM BROTHERS, B. S., M. D.,

Associate Professor of Gynecology, N. Y. Post-Graduate Hospital;  
Visiting Gynecologist, Beth Israel Hospital,

New York City.

(With two illustrations.)

The various malformations of the uterus have been classified by P. Müller as follows: a. complete absence of the uterus; b. atrophy of the uterus; c. absence and atrophy of the uterine neck; d. one-horned uterus; e. one-horned uterus with atrophied second horn; f. the two horned uterus; g. the two-chambered uterus; h. the double uterus; i. faulty development of the uterus.

I have had the unusual experience of unexpectedly coming across two rare and interesting anomalies of the uterus on the operating table in a short space of time from each other. The one case was a two-horned uterus, and the other proved to be a one-horned uterus with rudimentary second horn.

The normal development of the vagina, uterus, and Fallopian tubes follows a fixed plan by which the ducts of Müller, passing downward from the Wolffian bodies and making a half turn on their longitudinal axes, meet in the median line and, by agglutination of their walls with final absorption of the interior partitions, the single utero-vaginal canal is formed. Any error in this process may result in congenital malformations. Thus, in the case of complete absence of the uterus, it is possible that either the ducts of Müller were not formed or that they were destroyed. The various grades or varieties of uterine malformation, in a similar manner, correspond to the degree and nature of the disturbing forces or factors.

The two-horned uterus consists of two bodies with separate cavities and a single cervix which serves as a drainage canal for

both. In the most marked varieties each uterine body is a complete entity and lies in juxtaposition with its twin half. While the vagina frequently exhibits a partition, the adnexa are usually normal. Pregnancy may take place in one or other horn with no risk to the woman at all, or with risks which are so serious as to require the most severe forms of operative intervention. Menstruation also may cause no disturbance of moment as long as the two uterine cavities drain freely into the single cervix. In the event of failure in this direction, hematometra, hematosalpinx, and peritonitis may cost the life of the patient. Infection, finally, may develop in one or other of the uteri—usually in the lesser-developed half—a pyosalpinx and fatal peritonitis. This is what happened in one of the cases reported in this paper.

In the unicornate uterus—a report of one of which is also included in this paper—a second horn may be entirely absent or be found in a rudimentary condition. In the former case the corresponding tube, ovary, and round ligament, according to Kussmaul, are absent or atrophied. In the latter case, like one reported by Puech and my own case, the tube, ovary, and round ligament of the undeveloped side were entirely independent of any connection with the uterus. In Puech's case they received their supply of blood from the aorta and returned the blood to the inferior cava. The histories of my two cases were as follows:

CASE I.—*Bicornate Uterus*.—On January 15, 1909, at the Beth Israel Hospital, a case was referred to my service which gave a history strongly suggestive of ectopic gestation. The patient was a woman who had been pregnant in her married life, and had passed on to a condition of secondary sterility. According to her statements, she had suffered from metrorrhagia, cramps, and partial attacks of syncope. Her markedly anemic appearance made the diagnosis of extrauterine pregnancy very probable. On the other hand, while her temperature was normal and pulse only 104 at the time of our examination (which was made shortly after her admission), the blood examination showed a high leukocytosis and polynuclear count—the latter especially striking, viz., 96 per cent. The possibility of suppuration occurred to us, but not forcibly enough to exclude suppurating blood clots due to ectopic gestation. This latter diagnosis seemed to be still further supported by the fact that the blood count showed only 3,500,000 red cells and 68 per cent. of hemoglobin.

The physical examination in this woman, who seemed to be either so dazed or stupid that no really clear history could be obtained by the house staff, was very unsatisfactory because of the tense and fat abdominal wall. Still, rigidity and pain were not unusually pronounced. As there seemed to be nothing

really urgent about the case, we decided to postpone operation until the following day at the regular operating hour. That same night, about seven o'clock, a hurry telephone call was sent to come down to the hospital as the patient was pulseless and had suddenly gone into a state of collapse. We at once assumed this to be corroborative evidence of a fresh internal hemorrhage due to the suspected ectopic gestation. The vagino-abdominal examination in the morning had revealed nothing beyond a moderate degree of abdominal tenseness and very little or no sensitiveness. The second examination showed a single vaginal canal, a cervix flush with the vaginal roof with a single closed os, and nothing to indicate a diagnosis of uterine pregnancy. To

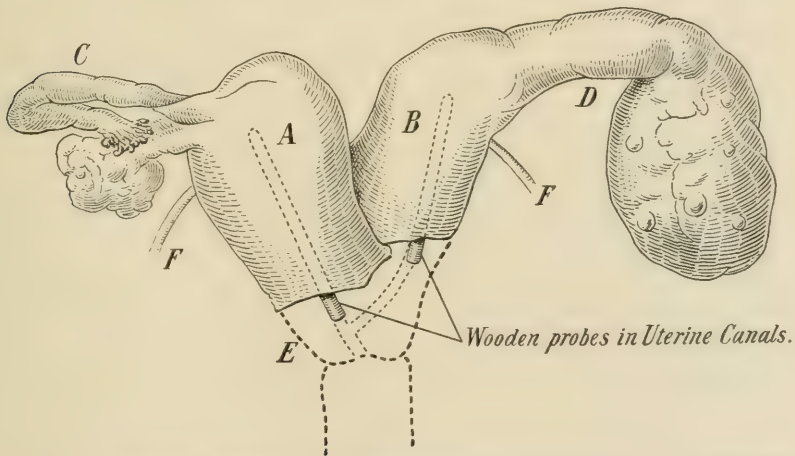


FIG. 1.—Bicornate uterus. A. Right uterus. B. Left uterus. C. Right tube and ovary. D. Left tubo-ovarian abscess. E. Common cervix and vagina. F. Round ligaments.

the left of the uterus, however, this examination revealed the presence of a vague mass. In spite of the woman being in a collapsed state, we proceeded immediately to operate—still under the conviction that the case was one of internal hemorrhage due to ectopic pregnancy.

On opening the abdomen, free thin pus in large quantities was found everywhere. The intestine, wherever we looked, seemed to be bared of its peritoneal coat or covered with free lymph. The intestinal lumen was distended in every coil within the field of operation. Naturally, the idea of an ectopic pregnancy was at once abandoned, and the next plausible explanation of the case seemed to be a general peritonitis due to perforative appendicitis. The appendix was sought for and, when found, showed a reddened inflamed tip. It had to be dug out of adhesions. Rapidly tying off and amputating the appendix, a careful search was renewed for the original pus focus, for we felt satisfied that the appendix was not the only, at least not the

principal, factor in the original disturbance. Passing the hand downward and to the right in the pelvic cavity, the right tube, ovary, and round ligament felt normal. The uterus seemed to be normal. As we gently proceeded over to the left side the tube and ovary seemed to be missing, but in their stead we discovered a hard globular body. After a few perplexing moments, during which a number of possibilities were carefully considered, it suddenly flashed through our minds that we were dealing with a bicornate uterus and that the hard round body to the left of the uterus was a second corpus uteri. The sulcus between the two uterine bodies dipped down at least one inch. Following the second uterine fundus to the left with the exploring hand, a large pyosalpinx, the size of a lemon, with its agglutinated, purulent, and macerated ovary was found passing behind the left uterus in a horseshoe curve. As we had evidently located the original pus focus in this pyosalpinx, a radical operation was decided on and everything was removed in one mass. In spite of venous saline infusions and the various methods of stimulation vigorously resorted to, the patient never recovered her pulse and died during the course of the night.

The case presents a number of points of interest. In the first place, excepting possibly for the assistance or light derived from the blood examination, there was no means of discovering that this was a case of general purulent peritonitis dating back days and possibly weeks before her admission to the hospital. Secondly, everything (excepting again the blood examination) seemed directly to point to a diagnosis of ectopic gestation, even up to the moment of opening the abdominal cavity. Thirdly, there must have been an oozing of infectious pus from the pyosalpinx (the opening being small and sealing itself spontaneously) for quite some time before her admission. Fourthly, a fresh rupture—leading into the final collapse—seems to have been possibly brought on by the physical explorations of the pelvis made by myself and house staff. A few reflections have suggested themselves to my mind as to the proper course to follow in a similar case in the future—the chief of which is *not* to insist on a too thorough exploration, especially by a number of medical men at one time. I did a supravaginal amputation of the uterus instead of the projected pan-hysterectomy because of the fear, at one time, that I would lose the patient on the table, and I resorted to the shortest operation with the object of saving, possibly, ten or fifteen minutes of time. Of course the abdominal wound was drained with gauze passed to the depths of the pelvis.

The appended rough sketch gives an idea of the condition present. Both uterine bodies are distinct and separated by a

deep sulcus. Evidently the right uterus, which is the larger of the two, was the functionating organ; and, although I have not the hospital notes at hand, I have quite a clear recollection of the fact that this woman had born children. The cervix of this right uterus was the one felt as being flush with the vaginal roof and apparently drained the menstrual and other discharges from the left uterus. In other words, while there are two distinct bodies, there is but one cervix, and even that is short and not fully developed. The pyosalpinx, vastly smaller than at the time of removal, is seen at the left. The right adnexa look fairly normal. The infection evidently involved the left uterus, whence it worked its way up to the left adnexa and peritoneal cavity.

CASE II.—*Uterus Unicornis (Right); Rudimentary Cornu (Left)*.—Mrs. J. S., æt. twenty-six, married two and a half years, no children, had one miscarriage at three months two years and a quarter preceding her visit to my office. According to my notes, she had been sick ever since the miscarriage. No curettage was done at the time and she left her bed after three days. Two months later she began to suffer from a pain in the right side which never left her. She had her periods every three weeks, but the flow was scanty. She had more or less of a leucorrhœal discharge. She described the pain as originating in the right iliac region and radiating upward to the right lumbar and dorsal regions. Because of the intensity of this pain, sexual life had to be discontinued.

The examination revealed a sensitive appendix and a movable right kidney. The uterus was quite small and seemed to be anteфлекed and drawn to the right. In the right pelvis also a distinctly enlarged adnexal mass was felt which was quite sensitive when touched. She was referred to Beth Israel Hospital for operation.

On January 21, 1909, the patient was put in the lithotomy position for examination under anesthesia preliminary to operation. The same conditions were found as before. We had projected to precede the laparotomy by a curettage, but there were such unusual difficulties encountered in the attempt to even pass the sound that we abandoned the attempt after a half-hour's work. Only once, and then after bending the sound acutely and passing it up to the right, did we succeed in overcoming the intracervical obstruction and pass the sound to a depth of 2 1/2 inches. The fear of perforating the uterus as well as the knowledge that this feature of the operation was of small significance induced us to desist.

A transverse abdominal incision was made, but as it failed to give convenient working room, a longitudinal incision, starting from the center of the first, was added. The somewhat

enlarged left ovary was felt, but the usual intervening bridge of Fallopian tube to the uterus was noted as missing. The small uterus was discovered some distance away toward the right side of the pelvis. It presented a smooth straight border passing vertically downward on the left side to the floor of the pelvis. On the right side the uterus was intimately adherent to a tumor which lay behind and to the right. The left tube and ovary as well as the left rudimentary cornu to which this tube was attached in the normal manner and to which it bore the proper relationship were separated from the uterus proper by a distance of at least three inches. A little closer study of the tumor in the right side showed it to be an ovarian multilocular cyst with a



FIG. 2.—A. Right horn of uterus. B. Left horn of uterus. C. Multilocular cyst. D. Left ovary.

thickened and shortened ovarian ligament. Just below this and between the folds of the broad ligament a nodule of the size of a hazelnut was felt. The right Fallopian tube was apparently normal. The round ligament of this side was located at its attachment to the lateral border of the uterus and found to occupy its normal position throughout its intraabdominal course. While the upper pole of the uterus seemed to be smaller than usual, it seemed to broaden out lower down and merge below in a cervix as large as itself. The left border of the uterus was smooth and rounded and presented a peritoneal coat continuous all the way down with that of the rest of the organ. At the upper left angle of the uterus there was not the least vestige of cornu or Fallopian tube. Following the left border of the uterus in a downward direction for several inches to the region of the internal os, a duplicature of peritoneum was discovered which stretched for three or more inches to the left, like an arched band with its concavity looking upward, and terminated at the level of the crest of the ilium in a nodule the size of a hazel-

nut, which proved to be the rudimentary horn of this side. From the left border of this nodule the left Fallopian tube, normal in size and appearance, passed outward with its associated ovary which was cystic and the size of a walnut. Below the left Fallopian tube a fibrous cord (about the thickness of a lead-pencil) connected the rudimentary cornu with the lateral pelvic wall. Just below this adventitious ligament the round ligament was found occupying its normal anatomical situation.

Because of the intimate and close connection with the pelvic floor and the danger of injuring the left ureter, no attempt was made to exsect the peritoneal duplicature which connected the left rudimentary horn and adnexa with the uterus. The left tube, ovary, and rudimentary cornu were removed *en masse*. Then the ovarian tumor on the right side and uterus (including the cervix were removed also *en masse*. There was some difficulty in getting into the vagina because of the thickened, club-shaped, and elongated cervix. It was at this stage of the operation, while working under abnormal anatomical conditions, that a lateral injury to the left ureter must have occurred. The bleeding was of little account as the ovarian and uterine vessels were easily seen and secured. After closing the opening in the vagina the peritoneal rents were sewed together across the pelvic floor and the abdominal wound was brought together by suture so that the resulting scar resembled an anchor.

The postoperative course was quite unpleasant for a long time because of the presence of a uretero-vaginal fistula. In the course of time, however, this healed spontaneously, and the patient was discharged as cured on March 23, 1909.

112 EAST SIXTY-FIRST STREET.

## FIBROSIS AS A CAUSE OF PRECLIMACTERIC UTERINE HEMORRHAGE.\*

BY

M. RABINOVITZ, M. D.,

Adjunct Gynecologist Beth Israel Hospital; Attending Gynecologist Gouverneur Hospital Dispensary.  
New York.

(With four illustrations.)

MODERN medicine aims toward scientific truth, and until the absolute is reached, observations, theories, and therapeutic methods will continue to undergo renewals and modifications. The writer therefore feels that he owes no apology for bringing before your consideration so well worn a topic as metrorrhagia preceding menopause.

In consulting the text-books we find that the causes of uterine hemorrhage may be subdivided into two main groups:

1. The mediate or remote causes include:

\*Read before the Eastern Medical Society, November 12, 1909.

- a. Metabolic disturbances—rheumatism, gout, chlorosis, and obesity.
  - b. Poisoning—alcoholic, lead, and phosphorous.
  - c. Syphilis.
  - d. Organic lesions—heart, lungs, liver, and kidneys.
  - e. Psychic influences.
  - f. Acute infectious diseases.
2. The immediate or local causes comprise, in order of frequency:
- a. Complications of early or advanced pregnancy or labor.
  - b. Various uterine displacements.
  - c. Endometritis as the result of either inflammatory or circulatory disturbances.
  - d. Diseased adnexa.
  - e. Uterine tumors, either benign or malignant.

There is, however, a class of cases who suffer from either menorrhagia or metrorrhagia, or from both, whose etiological factor cannot be found under the headings mentioned. This condition is encountered in women who have borne several children, who have also aborted one or more times, who have reached a period of life between the end of the fourth and beginning of the fifth decade, who suffer from no metabolic, poisonous, luetic, organic, or infectious diseases, and in whom a pelvic examination fails to reveal any distinct palpable lesion; and yet they are subject to intermittent or continuous uterine hemorrhage.

These cases very often tax the ingenuity of the best physician who, after running the gamut of medical means and after having resorted to repeated curettages, finds to his dismay that the bleeding remains unchecked; and that, unless a hysterectomy be resorted to, the patient is not only doomed to chronic invalidism, but she is also at a risk of finally succumbing to the constant sapping of her very life.

#### CASES.

CASE No. 917. S. K., age forty-seven. Admitted to Beth Israel Hospital, February 3, 1909.

*Family history* negative. *Menstruation* began at the age of thirteen, irregular in type, every four to six weeks, moderate in amount and painless. Married twenty-nine years; has had eight children and two miscarriages; last child eleven years ago; last miscarriage, six years ago. Five years ago she began to

suffer from menorrhagia and metrorrhagia. Three years ago was curetted, but the symptoms were not relieved and the bleeding continued in an irregular form, accompanied by cramp-like pains in the hypogastrium. For the last year the uterine bleeding is more frequent and excessive. On admission, patient looked markedly anemic, poorly nourished, and felt weak. Vaginal examination showed a somewhat enlarged uterus, with an hypertrophied cervix. Adnexa felt to be normal. A tentative diagnosis of malignancy was made, and on February 5, 1909, Dr. L. J. Ladinski performed an abdominal panhysterectomy. The patient made an uneventful recovery, and was discharged cured fifteen days later.



FIG. 1.—Blood-vessels show an increase of connective tissue in the adventitia, an hypertrophy in the media, and a normal intima.

*Pathological Report.*—The uterus is about one and one-half times its normal size, the cervix is hypertrophied and studded with many Nabothian cysts. Microscopically the endometrium shows no pathological changes. The myometrium is replaced to a marked degree by connective tissue, and in some parts the muscle fibers have undergone a hyaline degeneration. These areas of hyaline degeneration are situated chiefly around the blood-vessels which show great thickening of their walls. The intima shows a slight increase of the endothelial cells.

CASE No. 687. R. B., age thirty-seven. Admitted to Beth Israel Hospital, December 29, 1908.

*Family history* negative. *Menstruation* began at the age of

twenty, four-weekly in type, moderate in amount and painless. Married fifteen years, has had seven children and two miscarriages. For the last fifteen months the patient is suffering from excessive uterine hemorrhages. She was curetted thrice by different physicians during this period, but without any relief. The last curettage was performed six months before her admission to the hospital. On admission she complained of general weakness and of constant uterine hemorrhage, which confined her to the house most of the time. On examination, patient looked quite anemic. Heart, lungs, spleen, liver, and kidneys normal. Abdomen lax and flabby. No tumors to be felt, and no tenderness elicited anywhere. Vaginal examination

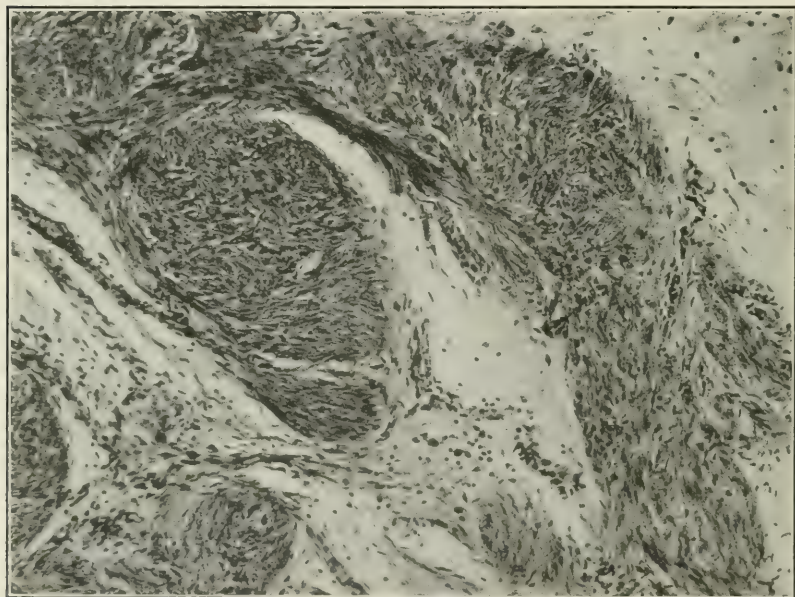


FIG. 2.—Fibrosis uteri, showing the increase of connective tissue between the muscle bundles and muscle cells, also areas of hyaline degeneration.

revealed a second degree laceration of perineum; cervix enlarged, not lacerated: Uterus about twice its normal size, regular in outline, freely movable and of a more firmer consistency than usual. Adnexa palpable, not tender; right ovary enlarged and cystic.

*Operation.*—On December 30, 1908, the writer performed an abdominal panhysterectomy; patient made an uneventful recovery, and was discharged cured on the nineteenth day.

*Pathological Report.*—The specimen is that of the uterus with its adnexa. The tubes and left ovary appear normal. There is a slight varicosity in the mesosalpinx. The right ovary is in a state of microcystic degeneration. The uterus is about twice its

normal size, smooth and regular in outline. An antero-posterior section shows its walls to be much thickened and much harder than normal. Microscopically, no changes found in the endometrium. The mesometrium shows an excessive proliferation of fibrous connective tissue, not only between the muscle bundles, but also between the muscle cells. This increase of connective tissue is also to be noticed around the blood-vessels. The blood-vessels, too, show morphological changes. There is an hypertrophy of the adventitia, very marked in the media, while the intima remains normal. The lumina of those blood-vessels are gaping, as if held apart by the surrounding layers of connective tissue, while others show a narrowing of their caliber, not due

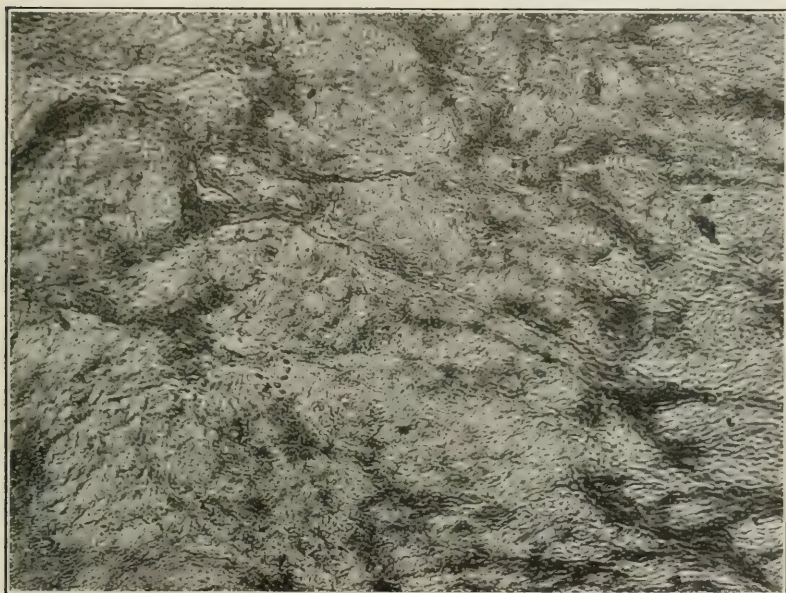


FIG. 3.—Weigert's stain for elastic tissue, showing its abundance where fibrosis is not present.

to any growth from the intima, but to an increase of muscle tissue in the media.

CASE No. 4085. M. K., age forty-five. Admitted to Beth Israel Hospital, September 7, 1909. Married thirty years. Has had ten children; no miscarriages. Last child three and a half years ago. Began to menstruate at the age of thirteen, four-weekly in type, moderate in amount and painless. For the last six months has been suffering from metrorrhagia, occurring every two weeks, and lasting from nine to ten days, accompanied by pains in the hypogastric region. Has also been suffering from leukorrheal discharges for the past three years. On admission, patient looked poorly nourished, anemic, and com-

plained of uterine bleeding and pains in the lower abdomen. Physical examination of the heart, lungs, liver, spleen, and kidneys was negative. Vaginal examination showed a relaxed vaginal outlet, cervix lacerated, uterus enlarged to about one and a half times its normal size, regular in outline, freely moveable, and harder to touch than normally. There was free bleeding of bright red blood from the uterine interior, and also from an eroded area on the mucosa of the posterior lip of the cervix. Adnexa were palpable, painless, and apparently normal. A probable diagnosis of a beginning epithelioma of the cervix



FIG. 4.—Weigert's stain: showing the marked diminution of elastic tissue in fibrosis uteri.

was made. On September 11, 1909, the writer performed an abdominal panhysterectomy, employing the Wertheim method. While there were no enlarged glands to be found along the course of the blood-vessels, there was present an indurated mass about the size of a walnut, around the left ureter, at the point where it passes below the uterine artery. The ureter was dissected out of this induration the greatest part of which was removed. The patient made an uninterrupted recovery, and was discharged cured October 2, 1909.

Sections from the area indicated in the cervix do not show malignancy. The myometrium shows an excessive proliferation of connective tissue between the muscle fibers and around the blood-vessels; in some parts this fibrous tissue is in a state

of hyaline degeneration. The section removed from the base of the left broad ligament around the ureter shows an old inflammatory process. Sections stained by the Weigert method for elastic tissue shows a marked diminution of same.

To avoid repetition, the writer will omit the report of the remaining four histories, for they are almost identical in both the clinical and the pathological findings.

What is therefore the cause of this form of uterine bleeding? A review of the literature discloses that the older writers, for want of better information, have termed this condition as "Idiopathic or essential uterine hemorrhage." A nomenclature of this character is purely empirical. It cannot stand the glare of scientific medicine, and should therefore be dismissed from our consideration.

The first scientific attempt to base the etiology of this form of metrorrhagia upon a sound pathological basis was that of Scanzoni. This investigator ascribed its cause to an atheromatous condition of the blood-vessels of the uterus. Reinecke, Simmonds, Chalmogoroff, Solowij, etc., have pursued this line of research and have arrived at similar conclusions.

Solowij describes his cases thus: The intima shows no, or a very slight increase of the endothelial cells; the media is very much thickened in consequence of a marked hypertrophy of muscle fibers, which at times show a hyaline degeneration; in the adventitia there is to be noted a very pronounced increase of connective tissue. The lumina of the blood-vessels are either gaping, narrowed, or closed by the meeting of the opposite surfaces of the circumference.

The writer has found similar morphological changes in his specimens, but contends that the term arteriosclerosis cannot be justly applied to these cases.

According to Gull and Sutton, "arteriosclerosis, or arterio-capillary fibrosis, is the result of morbid changes caused by alcohol, lead, gout and syphilis; that the disposition to them is hereditary in some families; that they constitute one of the regular senile changes, and that they are often associated with chronic diseases of the viscera. The pathological lesions produced are an increase in the size and number of the endothelial cells, there is a growth of connective tissue from the intima which encroaches upon the lumen of the artery and partially or completely occludes it. This connective-tissue growth may also extend outward toward the media, causing atrophy of its muscle fibers and finally also to the adventitia."

The class of cases the writer submits for your consideration is one in which the patients were not addicted to alcohol, they were not syphilitic, and did not suffer from gout or lead poisoning. Neither were they suffering from a disease of any of the vital organs, nor did they show arteriosclerotic changes in other parts of the body. The pathological picture presented by the blood-vessels in the uteri removed from these patients differs materially from the one seen in typical arteriosclerosis. In arteriosclerosis the morphological change commences from the intima and extends outward, while in our cases the growth of new connective tissue is seen around the adventitia, into which it finally extends. The media undergoes a muscular hypertrophy, probably a compensatory hypertrophy, while the intima shows no deviation from the normal, with the single exception that occasionally there may be seen a slight increase of the endothelium. In arteriosclerosis there is a tendency toward the obliteration of the blood-vessel lumina by the growth from the intima, while in our cases the blood-vessel lumina are kept wide open by the concentrically laid layers of connective tissue, and if their calibers become at times narrowed or obliterated, then it is mainly due to a muscular hypertrophy of the media. The most proper terminology for the structural changes met with in the blood-vessel walls of these cases would be the one used by Reinecke, namely, "hypermyotrophy."

True cases of arteriosclerosis of the uterine blood-vessels have been described by Cruveillier, von Rokitansky, Klobb, Findley, and others, but this occurred in patients who have long passed their climacterium, usually between the ages of sixty to seventy, and as an accompaniment of general senile changes. The pathological results of such metamorphosis are hemorrhages into the uterine parenchyma, either into the mucosa or muscularis, causing what is known as *uterine apoplexy*. This escape of blood very rarely finds its way into the uterine interior, and if it does, the amount is so small that it requires no surgical interference. This group of cases therefore is of little clinical importance, and adds no elucidating facts bearing upon the etiology of metrorrhagia in the cases the writer has reference to.

In addition to the structural changes in the blood-vessels, the specimens presented show also a great increase of connective tissue in the uterine walls. This connective tissue is to be found between the muscle bundles, between the muscle fibers, and around the blood-vessels. With the increase of connective

tissue there is a diminution of muscular structure, which shows in many places hyaline degeneration.

Which of the two conditions, therefore, is the main cause of this form of uterine hemorrhage in the preclimacteric period? Is it the blood-vessel changes, or the lack of contractile power in the uterine wall, whose muscle has been replaced to a marked extent by fibrous tissue? Furthermore, is this increase in connective tissue primary, and the arterial changes secondary, or *vice versa*? Are these morphological changes the sequellæ of inflammatory reactions, or not?

Reinecke, Pichevin, Petit, Marchesi, and Chalmogoroff claim that the metrorrhagia is due to changes in the blood-vessels which lose their contractile and retractile powers. That the fibrotic change in the myometrium is secondary to the arteriosclerosis, and that the growth of connective tissue in the muscularis is the result of circulatory disturbances, and defective nutrition, and not to inflammatory processes.

Bland Sutton describes the fibrotic changes in the uterus as secondary to chronic infective metritis, and analogous to curious fibroid changes which occur in the hearts of luetic subjects.

Solowij, while agreeing that the connective-tissue increase in the parenchyma is the sequence of tissue response to irritations caused by either organic or inorganic poisons; yet he maintains, contrary to the views of the above mentioned authorities, that the morphological changes in the myometrium are primary, and those in the blood-vessels secondary. He sums up the results of his findings thus: "Das führt uns zur Annahme dass der Impuls zur Wucherung der Gefässwände eher ausserhalb der Gefässe in Uterus parenchym, und zwar in seiner entzündlicher Veränderungen liegen dürfte."

Thielhaber and Meier state that the metrorrhagia and menorrhagia of the preclimacteric period is dependent upon a condition which they term as "insufficiencia uteri." This insufficiency of the uterus is brought about by an intermuscular and perivascular development of connective tissue. With the increase of connective tissue there necessarily follows a diminution of muscle fibers, and just as the ratio between the fibrous tissue and the muscle tissue is increasing, so will the power of the uterus to control bleeding be diminishing. These tissue changes are not the result of preceding or accompanying inflammatory causes, but the sequence of normal physiological, or rather biological processes.

The views of the last quoted investigators fully coincide with those of the writer. In none of the cases that came under my observation could a history of either recent or old inflammatory affections of the generative organs be elicited. Physical examination of the pelvis failed to reveal any traces of perimetrial or adnexal inflammation. Microscopically no round cell infiltration or scar formation could be demonstrated in the sections taken from the adnexa and the uteri. The contention of Thielhaber, therefore, that the increase of connective tissue is not the result of preceding inflammatory causes, is correct.

What, however, has given rise to this metaplasia? According to biological laws, whenever the parenchyma of an organ wastes or atrophies through disease, lack of activity, or overexertion, connective-tissue development ensues and replaces it. The uteri of some multiparous women bear evidence to this truism. It is a well established fact that the uterus of a multipara is larger than that of a nullipara, that this increase in size is due to an hyperplasia of all its tissue elements during gestation, and that during the period of involution, when the organ is returning to its original state, the only one of its tissues that lags behind in the retrogressive changes, is the connective tissue. Hence the uterus remains somewhat large after each successive pregnancy. Should, therefore, the interval between the periods of involution become shorter by virtue of repeated impregnations, the uterus will, *pari passu*, undergo marked morphological changes. The connective tissue will increase after each pregnancy, and the muscle parenchyma, due to its overexertion, will atrophy and be replaced by new fibrous tissue. This disproportion between the tissue elements in the uterus will ultimately alter its physiological properties. The uterus will gradually lose its contractile powers, and therefore become less capable of controlling hemorrhage. Should this process continue beyond the danger zone, *i.e.*, should the fibrous tissue assume a proportion in the structure of the uterus far greater than what is allotted to it naturally, then the condition of insufficiency of the uterus becomes fully established, and its inherent power of spontaneous control of menorrhagia or metrorrhagia is completely lost.

#### RESUME.

This type of preclimacteric uterine hemorrhage is therefore due to an hyperdevelopment of fibrous connective tissue in the uterine

walls, which takes the place of the exhausted and finally atrophied muscle fibers. With the diminution of muscle tissue and elastic fibers there ensues a loss of contractility, and this loss becomes greater after each succeeding pregnancy, until uterine compensation is entirely broken. The menorrhagia and metrorrhagia in this class of cases is not due to friability or atheromatous condition of the blood-vessels, but to an insufficiency and inability of the uterine muscles to contract and close the gaping arteries and sinuses. The blood-vessel changes are secondary to those taking place in the muscularis, as proven by the invasion of fibrous changes from without into the adventitia, by the compensatory hypertrophy of the media, and by the normal state of the intima. The condition of fibrosis uteri is not the sequel of inflammatory reactions, but the result of biological changes.

#### SYMPTOMATOLOGY.

We meet this form of preclimacteric uterine hemorrhage in multiparæ between the ages of thirty-five and fifty, who are otherwise well, and suffer from no lesion of any of the vital organs. Pelvic examination is usually negative, excepting for a somewhat enlarged and hard uterus. No history of infection postpartum or postabortionem can be obtained. The bleeding is becoming worse as time progresses, and while it greatly reduces the health of the patient, the cachectic look is wanting, and the blood is devoid of the peculiar odor characteristic of malignancy. Pain, if present, is usually located in the hypogastric region. Medical means and minor surgical procedures are of but ephemeral value.

#### TREATMENT.

Emmet advocates the sewing up of the external os. Olshausen suggests oophorectomy, and Martin advises the ligation of the uterine arteries. Of the three methods mentioned, the first does not seem worthy of serious consideration, for it is neither a safe nor a sound procedure. The last two, on the other hand, deserve our thorough deliberation. We have learned from the works of Olshausen, Pfluger, Leopold, Mironoff, and others, that while ovulation may take place without menstruation, the latter, however, is always dependent upon the former. Menstruation, therefore, expresses the climax of uterine congestion, which is reached about once in twenty-eight days, and which is brought

about by reflex ovarian stimulation. As soon as the excess of blood in the uterus is removed by the menstrual flow, the uterine muscle contracts and the bleeding gradually ceases.

The phenomenon presented by a uterus in a state of fibrosis is quite a different one. Here the equilibrium between the augmentative and the inhibitory forces of congestion is destroyed. While the ovaries maintain their normal function, *i.e.*, the property of causing uterine congestion, the uterine muscle, on the other hand, has lost its tone, and as a result a condition of either menorrhagia, or metrorrhagia is established. Olshausen's method, therefore, is scientific and logical, for by the removal of the ovaries we at once do away with the main factor that causes uterine hyperemia. Martin's procedure is based upon purely anatomical grounds, and it too is very plausible.

In the light of modern surgery, however, fortified as we are today by asepsis and an almost flawless technic, the wisest plan of treatment for these patients seems to be hysterectomy. For to the experienced surgeon the removal of the uterus, especially per vaginam, offers as little difficulties, and exposes the patient to as little risk, as does a double oophorectomy, or the ligation of the uterine arteries. Furthermore, this method has the advantage that it does not deprive the woman of her sexual instincts, and does not subject her to those dire and nerve-wrecking results which follow sudden withdrawal from the economy of the ovarian secretion. As to the method of hysterectomy, whether it be abdominal or vaginal, this must be left to the ability and discretion of the individual operator; personally, I prefer the vaginal route.

In conclusion, I wish to express my gratitude to Dr. L. J. Ladinski, in whose service I had the opportunity to operate upon and make use of the material which served as the basis of this paper. I also desire to thank Drs. E. Moshkovitz, and D. Sheitlis for their kindness in preparing the microscopic sections.

#### BIBLIOGRAPHY.

- Thielhaber, A. *Münch. med. Woch.*, 1905, B. lvii, 1249.  
 Thielhaber, A. *Monatschr. für Geb. u. Gyn.*, 1903, S. 972.  
 Thielhaber, A. *Arch. für Gyn.*, 1902, B. lxvi, Heft 1.  
 Thielhaber, A. *Arch. für Gyn.*, 1900, B. lxii, Heft, S. 415.  
 Reinicke, E. A. *Arch. für Gyn.*, 1897, B. liii.  
 Hirschman u. Adler. *Zeitschr. für Geb. u. Gynec.*, 1907, B. ix, Heft 1.

- Kubo, T. AMER. JOUR. OBST., 1908, vol. lviii, p. 675.  
 Rees, Chas. M. AMER. JOUR. OBST., 1908, vol. lviii.  
 Slocum, R. S. *Surg. Gyn. and Obst.*, April, 1908.  
 Simmonds, M. *Centr. für Gyn.*, 1901, S. 81.  
 Olshausen, R. *Berlin. klin. Woch.*, 1894.  
 Findley, P. AMER. JOUR. OBST., 1901, vol. 1, p. 30.  
 Klob. *Pathol. Anatomie der weiblichen Sexualorgane*. 1864, S. 203.  
 Cullen, T. S. *Annals of Gyn. and Ped.*, Boston, 1904.  
 Switalski, L. *Centr. für Gyn.*, 1895.  
 Coe, H. C. *Internat. Clinics*, 1892.  
 Leopold and Mironoff. *Arch. für Gyn.*, B. xlv.  
 Norris, C. C. AMER. JOUR. OBST., March, 1909.  
 Cholmogoroff. *Monatschr. für Geb. u. Gyn.*, B. xi, Heft 3.  
 Brennecke. *Arch. für Gyn.*, B. xx, Heft 3.  
 Nomenclature of Endometritis. *Jour. Am. Med. Assn.*, March 23, 1907.  
 Barbour, A. H. F. *Jour. of Obst. and Gyn., British Empire and Ireland*, June, 1905.  
 Solowij, A. *Monatschr. f. Geb. u. Gyn.*, B. xxv, S. 291, Heft 3.  
 Anspach, B. M. *Jour. A. M. A.*, March 14, 1908.  
 Bland, Sutton. *British Med. Jour.*, 1899.  
 Bandler, S. W. *Am. Jour. of Surg.*, March, 1909.  
 Delafield and Pruden's Pathology, p. 505.
- 243 EAST BROADWAY.

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## IS THE ROUTINE EXHIBITION OF THE PREOPERATIVE PURGE DEFENSIBLE?<sup>1</sup>

BY

EDWIN WALKER, M. D.,

Evansville, Ind.

In a paper read before this association at Cincinnati in 1906, I called attention to the great abuse of purgatives both by the laity and the profession. The people in general regard purgatives indicated in all ailments, and even take them when no disease exists. Practically every house has its "ever-ready" laxative. This state of affairs is due to the teaching and practice of the medical profession. Does not his family physician inaugurate every treatment with a cathartic? Even his surgeon, who professes scant faith in drugs, purges every patient before a surgical operation, no matter how simple. Can we wonder, then,

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

that purgatives are almost universally employed? Yet every physician must know that their universal use is harmful, that they aggravate many diseases. In acute cases, serious consequences may ensue. They are not only powerless to cure constipation, but are the most frequent cause of this trouble. Constipation, in the vast majority of instances, is due to carelessness in habits and improper diet.

For the past five years I have noted in my histories, those who habitually use purgatives, and the results of correction of habits and diet, and it is astonishing how few are not promptly relieved by these simple methods. The few who are not, have some trouble which needs surgical or other treatment for relief.

Purgatives have a value in autointoxication and toxemia, but even in these they should be given on distinct indications only, for in many cases the poison is far out of reach of the cathartic, and its only effect is to weaken the patient.

When preparing the paper mentioned, I made quite an extensive search of the literature of the subject to inform myself how purgatives acted, and their exact effect on the human organism. The available information was very unsatisfactory; authors differing widely on the subject but all agreed, however, that they were irritants and are capable of producing enteritis. They all produce liquefaction of feces, increase peristalsis and the formation of gas, the latter being due to excessive germ activity. This is exactly what we find in enteritis from any cause. Schmitt showed that normal constipated stools contain fewer germs and underwent decomposition slowly, even in an incubator. Roos was able to purge patients with live cultures of colon bacilli, while the dead germs had no effect.

The salines and mild laxatives doubtless do less harm but the difference is only one of degree. The stronger purgatives, except perhaps calomel, are now but little used, the milder laxatives have taken their place; this is a great improvement, but even these should be given for definite indications only. I want to repeat the protest made three years ago against routine use of purgatives, and with careful inquiry into the etiology and the correct diagnosis of disease, they will be less frequently prescribed. Remove the cause by diet, habits or surgery and the laxative is superfluous.

It is, however, against the routine purge in all surgical cases, I wish especially to protest. If there is a hospital anywhere (except my own) in which the preliminary purge is not given to

all patients operated upon, I have not heard of it. Such a universal practice is absurd. Surely every patient requiring operation is not suffering with trouble with the digestive tract; on the contrary, a vast majority have no trouble at all; why then make them sick and weaken them by a purge? We know that in the normal individual the process of digestion and evacuation is remarkably constant. It takes about seven hours for the stomach to empty itself, in five hours more the small intestine has extracted what nourishment it can and the remainder is pushed through the ileo-cecal valve. In the small gut the contents are always fluid and its movements are almost as regular and rhythmical as those of the heart. The time of the movement of food thus far (to the cecum) varies but little, unless there is a gross obstructive lesion.

The colon is more sluggish; extracting energetically the fluid, it pushes the mass along until it reaches the sigmoid, where it remains until defecation begins; this generally requires twelve hours. If, therefore, the patient has a normal alimentary canal, in twenty-four hours you can have an empty canal merely by giving a light digestible diet, without a purgation. Functional diseases need not concern us here as they rarely, if ever, interfere with the normal propulsive action of the stomach or small intestines. In this part of the *prima via*, organic obstructive lesions only interfere with the normal course of the intestinal strain.

A condition of atony has been described, but some of the best authorities (Conheim) have never encountered atony of the stomach or small gut. There is no loading or clogging and solid or fluid matter is rarely found in them, when the patient has fasted twelve hours before the operation. It is in the colon, therefore, that we find the trouble, for careless habits, diet containing too little refuse to pass off, has in a measure injured the viscus. Metchnikoff says that the colon is a superfluous organ as we now live, and attributes "old age" to autoinfection from the gut, and thinks if the species were rid of it, life would normally be twice as long as it is now. There is no doubt that the consumption of vegetables and coarse foods is of advantage. Von Noorden has shown the great value of coarse diet in membranous colitis.

The colon is the portion of the canal which gives the most trouble to the physician, and also to the surgeon in preparation of his patients for operations in general. It normally constantly contains some fecal matter, but not enough to interfere with any operation, except on the large gut itself. In persons

of constipated habit, I mean the milder forms, there rarely is enough fecal retention to interfere with operations on pelvic or abdominal organs, besides the colon. Large fecal impactions are very rare and when found are in the sigmoid and transverse colon, more rarely in the ascending colon. Any accumulation large enough to interfere with any surgical operation, except on the colon itself, could not be removed by a single purge; in fact, it only increases the amount of fluid and removes but little, if any, of the impaction. Anyone who has had a large fecal accumulation to remove, knows how slow, tedious and difficult it is to do it. I once observed a hard fecal mass in the ascending colon of a woman, which resisted all efforts at removal by purgatives and enemas for six months, until I thought it must be a growth of some kind. An operation became necessary for a pus tube and at that time I examined the colon, found a fecal mass and expressed it. If, therefore, the colon contains only a normal amount of feces, the diet and fasting with an enema or two will put the gut in good condition. If the accumulation is larger and of long duration and if time will permit, the colon should be unloaded by enemas of a solution of bicarbonate of soda, oil and large enemata of water, with a coarse diet. It is best if possible to do all this and have here an interval of several days afterward, before the operation is undertaken.

The colon is the seat of active germ activity and the removal of masses would temporarily stimulate their activity. Besides these accumulations indicate more or less colitis and there is greater danger from infections of this kind. If the accumulation is caused by an organic obstruction it is apparent that purgatives alone cannot remove it. It may be argued that the very fact that purgatives are so universally employed is *prima facie* evidence of their value and harmlessness. This does not necessarily follow; the profession has fallen into many fads, blood-letting, for example, which did much harm, and had to be banished by outside criticism.

Purgatives do affect the patient unfavorably, they weaken him and in the debilitated it might be enough to turn the scale. This is doubtless rare but does occur. One thing is certain, they make the patient more uncomfortable, and at a time when he has plenty to annoy him, we might at least spare him this. They surely do increase the formation of gas. The first change I noted after giving up the purge was that patients had less tympany and were thus spared much pain and discomfort.

After the operation, if patients can early take solid food and be out of bed, they will rarely need anything for the bowels, as they will act in a short time. If, however, by reason of nausea or other cause, but little food is taken and the patient has to remain in bed ten days or more, unless the bowels are aided, feces will accumulate in the sigmoid and rectum, and as their fluid contents are rapidly absorbed we may have a hard mass to contend with, which though not serious, may have to be broken up with the finger and removed, causing much discomfort and perhaps pain. With a few enemas this can be avoided and a laxative will rarely be required.

After intestinal resection I have waited from nine to twelve days, then observed a natural evacuation without a cathartic, and with no discomfort or trouble to the patient. I have followed the line of practice marked out in this paper for five years and my results have been better and my patients more comfortable than before.

#### CONCLUSIONS.

Purgatives can do harm and should be given only when indications are clear. The profession should abandon the slipshod, routine methods now in vogue and should teach the laity, both by precept and example, the evils of the purgative habit.

The practice of purging all patients before surgical operations is unnecessary and injurious; they are made more uncomfortable, are weakened and the condition of the intestinal canal is not rendered more favorable but, on the contrary, germ activity is stimulated just as it is in enteritis, increasing the probability of infection when the gut is opened, and there is in addition to this more postoperative tympany.

A diet of digestible food for twenty-four hours or more and a fast of eight or twelve hours before, puts the intestine in the best possible condition for any operation, especially on the intestinal canal, except where obstructive lesions exist, and for these purgatives are worse than useless, and other measures are required.

In a few cases of milder fecal stasis a purgative several days before operation, followed by enemas are of service; these are, however, extremely rare.

The routine use of any powerful drug is to be deplored, and the habitual pre-operative purge is indefensible.

## INTRAPARTUM VAGINAL MYOMECTOMY FOR INTRA-PERITONEAL FIBROIDS OBSTRUCTING LABOR,

WITH REPORT OF A CASE.<sup>1</sup>

BY

K. I. SANES, M. D.,

Pittsburg, Pa.

FIBROIDS obstructing labor are not frequently met with. It is true that 10 per cent. of women of the child-bearing period have uterine fibroids, but the myomatous uteri with their abnormally shaped canals, displaced tubes, irregular circulation and pathological endometria do not favor pregnancy. About 30 per cent. of women with myomata are sterile and about 20 per cent. of those that do conceive, abort.

Not only are full-term pregnancies in myomatous uteri uncommon, but the great majority of them go through labor without serious trouble. The most common fibroids, the interstitial and subserous, situated above the lower uterine segment, never cause obstruction. The only fibroids that may cause obstruction are the sessile fibroids of the lower uterine segment, and the impacted pedunculated ones. (Cervical fibroids, as extraperitoneal, are not within the scope of this paper.) But, even in these pedunculated and sessile fibroids normal deliveries may take place. These fibroids may during labor be lifted out of the pelvis by the uterine contractions; they may be pushed out of the pelvis by obstetrical manipulations and may, as result of the pressure on them by the presenting part, assume a position or form more favorable for delivery.

But, there are cases in which such favorable changes do not take place. In such cases we either deliver the child by abdominal Cesarean section (with or without hysterectomy), or perform a vaginal myomectomy and deliver the child through the parturient canal.

Looking through the leading text-books on gynecology and obstetrics, we find abdominal Cesarean section universally recommended. A rather careful search through literature failed to find a single case reported of an intrapartum vaginal myomectomy followed by vaginal delivery. Yet, there are

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

cases where the vaginal myomectomy should be the operation of choice. Such cases are the pedunculated and sessile fibroids so situated as to enable us to have complete control over their vascular supply.

But how are we to tell those favorable cases? Are we not liable to find, after vaginal incision, the tumor so high, so large, so deeply imbedded in the uterus and so adherent, as to make the vaginal myomectomy unsafe and even impossible? Suppose we do, suppose we are compelled then to perform a Cesarean section with a hysterectomy, what harm is done the patient? The time spent on disinfection of the vagina and on the colpotomy is not lost, the work done forming part of the abdominal hysterectomy.

But what are the advantages of the vaginal myomectomy? To answer this question concisely they are as follows: 1. The child is delivered through the normal channel. 2. The uterus is saved. 3. The postoperative shock is milder. 4. The convalescence is shorter. 5. The mortality for both mother and child should be lower. 6. The generative and menstrual functions of the mother are retained.

Of course the vaginal myomectomy may turn out to be incomplete; the uterus may have other fibroids besides the one causing the obstruction. But such fibroids may never give any trouble and may in time even entirely disappear. Besides, it should be remembered that we have to deal with an emergency, and that our object is to meet the emergency with the least possible danger for mother and child. The vaginal myomectomy answers this purpose best and should, therefore, be the operation of choice. We shall not stop here to discuss the possibilities of accidents during and after myomectomy. If they occur they should be treated, just as we do in other vaginal operations: through the vagina if possible, if not, through an abdominal incision.

#### TECHNIC OF THE OPERATION.

The technic is not a difficult one for those accustomed to do vaginal work. A longitudinal or still better a T-shaped incision is made on the posterior vaginal wall, the pelvic cavity is entered and hemorrhage arrested. The tumor is then seen presenting through the incision. The finger, or if possible, the whole hand is forced into the pelvis and the tumor is examined. With one or more volsella the tumor is then caught and traction is made

upon it. Any adhesions found are freed. If the tumor is too large to be delivered through the incision a V-shaped piece of it may be excised before its removal.

If the tumor is found pedunculated, an angular clamp is applied to the pedicle, the tumor is removed and the pedicle after transfixing it with a strong ligature above the forceps, is ligated. If the myoma is sessile, an incision is made on either side of it, the tumor is enucleated and the flaps are sutured.

After removal of the tumor the vaginal incision is closed either before or after delivery of the child. It is desirable, of course, to close the vaginal incision before the delivery of the child but, in the case to be reported in this paper, as well as in the case of intrapartum vaginal ovariectomy reported by me previously (*AMER. JOUR. OBST.*, vol. lvii, No. 2), the child's head came down the vagina immediately after the removal of the tumor, thus covering the incision and making the closure before delivery impossible. In such cases the delivery, of necessity, must precede the closure of the vaginal incision. Pelvic gauze drainage may be used, if necessary. Fowler's position and vaginal douches are desirable features of the after-treatment.

#### REPORT OF CASE.

Mrs. B., forty-two, VIII-para. Admitted to my service at West Penn Hospital, November 3, 1906. Patient gave a good menstrual history. Her last childbirth, two years before admission, was normal and, on previous examination, no abnormality was discovered. Labor began about twelve hours before admission to the hospital. Dr. C. Anderson found a fibroid obstructing labor and, with the assistance of Dr. M. C. Cameron, attempted to push the tumor out of the lower pelvis, but without success. The amniotic sac having been found ruptured and the cervical os dilated, an attempt was made by them to deliver the child with high forceps but every traction on the child's head brought down the tumor in front of it.

A Cesarean section was decided upon, and the patient was sent to the West Penn Hospital. On admission her temperature was 97°, pulse 120, respiration 40. On examination of the pelvis a large tumor, hard, and somewhat movable and independent of the cervix was found in the posterior culdesac. The cervix was found displaced forward and upward, and its os dilated and directed against the upper part of pubic bone. The head of the child was found above the superior strait.

After an unsuccessful attempt under anesthesia to push the tumor up, I decided to try a vaginal myomectomy and if unsuccessful, to perform a Cesarean section. A small transverse incision was made in the posterior culdesac and finding it bleeding extensively, a longitudinal vaginal incision was made thus forming a T-shaped incision. The hemorrhage following the longitudinal vaginal incision was comparatively small. The posterior culdesac was then entered and the tumor was exposed. With a strong volsellum forceps the tumor was firmly caught and traction was made upon it. Sweeping the hand around the tumor I found it to be a sessile fibroid attached to the lower posterior uterine segment, the attachment being very superficial. An incision was made on either side of the fibroid near its attachment, the tumor was enucleated and the two serous flaps were caught with a clamp. The bleeding was then controlled by torsion and catgut ligatures. The child's head came down (right occipito-posterior position) making the closure of the vaginal incision before delivery impossible.

After packing the posterior culdesac with iodoform gauze, Dr. Cameron delivered the child with forceps and immediately afterward delivered the placenta. I then closed the posterior vaginal incision leaving a small opening for gauze drainage.

The patient made an uninterrupted recovery. The mother and child were discharged November 24, 1906, twenty-one days after admission. July 26, 1909, two years and seven months later Dr. C. A. Anderson and myself examined the patient and found her uterus movable and of normal size.

PARK BUILDING.

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## CESAREAN SECTION, ABDOMINAL AND VAGINAL, COMPARED AND CONTRASTED.<sup>1</sup>

BY

MILES F. PORTER, M. D.,

Fort Wayne, Ind.,

Surgeon to Hope Hospital, Professor of Surgery in the Indiana University School of Medicine.

I WISH to preface my remarks by saying that in my opinion, in discussing obstetrical operations, and in obstetrical practice, too little attention is paid to the life of the unborn child and too little to the morbidity of both the child and the mother. Ob-

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

setrical procedures should be conducted not only with the view of permitting both to survive the ordeal but with the further purpose that neither shall be harmed thereby, to the end that the mother recover completely, and that the child be not hindered from developing into a normal adult. The only excuse I have to offer for referring to vaginal incisions of the uterus for purposes of delivery as Cesarean section is that many others have done so before me and the rôle of the reformer is neither profitable nor popular.

I wish first to compare the inherent difficulties of the two operations. In vaginal section the work must be done in a more contracted field and one less well lighted than obtains in abdominal section. In the vaginal operation also, the operative field is more obscured by blood. Practically perfect asepsis is less easily attained and maintained in the vaginal than in the abdominal operation. The delivery of the child after the abdominal section is without difficulty while not infrequently the delivery of the child after vaginal section is quite as difficult and more time-consuming than the section itself.

Second, let us inquire what obstacles to delivery each of these operations removes or circumvents. The vaginal operation removes only the obstruction offered by the cervix, and circumvents no others. By the abdominal operation all obstacles to delivery that lie at or below the pelvic brim are avoided. The placenta as an obstacle is frequently met in the abdominal operation and seldom met in the vaginal, except in cases of placenta previa when it is always encountered in the vaginal operation, and always missed in the abdominal operation.

What character of wound is left to be repaired after delivery by abdominal section and what after delivery by vaginal section? The former is an incised wound, the latter an incised wound more or less complicated by contusion and laceration. After closure the abdominal wound, or wounds if one prefers to call the uterine incision a separate wound, is, because of the location and dressing, effectually protected from the postoperative infection. After the vaginal operation no such effectual protection against infection is possible.

In the abdominal operation the peritoneal cavity is always opened, in the vaginal operation it is not opened save by accident. The abdominal operation consumes less time than the vaginal. The amount of blood lost in the two operations is practically the same, except in cases of placenta previa, in which cases there

is a greater blood loss in the vaginal operation. The chances for infection are greater in the vaginal than in the abdominal operation in that the resistance of the tissues invaded is less in the former than in the latter.

Should infection occur the danger therefrom would be greater after the abdominal operation. It is no doubt true that the patient and friends will consent more promptly to a vaginal than to an abdominal operation. This is due chiefly, I think, to an erroneous belief in the comparative safety of vaginal operations and secondarily to the dread of a belly scar which by the way in a clean case properly treated should be practically invisible after a few months. In both of the operations the mortality rate is higher when they are done in the presence of infection. In the vaginal operation one is operating in, and through, the infected area; in the abdominal operation the infected area is not disturbed. It would seem fair to assume that the presence of infection adds no more risk to the abdominal than to the vaginal operation and possibly less. The vaginal operation does not avert the dangers to the soft parts, other than the uterus, attendant upon an accouchement forcé, *i.e.*, lacerations and fistulæ; the abdominal operation does so completely.

As to the possible remote results of an untoward nature of the two operations I have shown in a previous paper<sup>1</sup> that the danger to be feared from rupture of the uterus in subsequent pregnancies, from adhesions, and from hernia, following the abdominal operation is too slight to deserve serious consideration. Peritoneal adhesions will of course not form as a consequence of the vaginal operation unless the peritoneal cavity is invaded, nor will this operation superinduce hernia.

Concerning the danger of rupture of the uterus in subsequent pregnancies after the vaginal operation one may not speak with great positiveness because of the sparsity of accumulated evidence bearing on this point, due to the newness of the operation.<sup>2</sup> Judging however from our knowledge of the principles involved we are warranted in concluding that there is as great, and probably greater, danger of rupture of the uterus in subsequent pregnancies after the vaginal operation as after the abdominal operation. The abdominal operation offers the child a better chance to live and develop normally than any other method of delivery.

In the vaginal operation the child is subjected to all of the dangers, immediate and remote, attendant upon an accouche-

<sup>1</sup> *Journal A. M. A.*, March 20, 1909, vol. cdx.

<sup>2</sup> Dühresen advised the operation first April 1, 1895.

ment forcé, barring those consequent upon an undilated cervix. It is well to recall the fact here that cerebral hemorrhage in the child is a frequent result of *accouchement forcé*; that this accident always entails permanent disability, and that in 30 per cent. of the cases epilepsy develops.

In my paper previously referred to it is shown that the maternal mortality of the abdominal operation is 1.58 per cent. I know of no statistics from which one would be warranted in drawing conclusions as to the maternal death rate of vaginal Cesarean section. It is safe to assume however that when done for delivery at or near term, the rate would be about that of delivery by high forceps, which, according to the statistics from the clinics at Breslau, Budapest, Berlin, and St. Petersburg<sup>1</sup> varies from 0 to 6.5 per cent. It is hardly necessary to say that in speaking of the mortality of these operations I mean the deaths due to them and not all those following them, for the majority of the deaths following them are due to the conditions for the relief of which the operations were done, and not to the operations themselves. In comparing the mortality of these operations it must be remembered that the delivery of the child after the abdominal incision is an element of small moment, while in the vaginal operation the delivery of the child is a matter of equal or greater consequence than the incision of the uterus. It is likewise safe to assume that the maternal morbidity following the vaginal operation for delivery at term is about that of the high forceps operation which according to Reimann (*loc. cit.*) is 23 per cent. The maternal morbidity following abdominal Cesarean section is less than that following the high forceps operation. Newell of Boston in a personal letter, speaking of abdominal Cesarean section says: "I believe the morbidity in these cases is very slight and certainly very much less than could be claimed for the ordinary obstetric operation in the same class." Given an absolutely or relatively large pelvis and vagina or a dead or non-viable fetus and many of the objections to the vaginal operation do not obtain, and conversely with similar conditions many of the arguments favoring the abdominal operation do not apply.

*Summary.*—Vaginal Cesarean section is a more difficult operation than abdominal Cesarean section. By the abdominal operation all obstacles, at or below the pelvic brim, to the delivery of the child are avoided. By the vaginal operation the

<sup>1</sup> *Progressive Medicine*, September 1, 1908, p. 208.

only obstacle removed or avoided is that offered by the cervix.

The vaginal operation does not leave an ideal surgical wound; the abdominal operation does.

In the abdominal operation the peritoneal cavity is necessarily and intentionally invaded; in the vaginal operation it is invaded only by accident. The abdominal operation consumes less time.

The loss of blood is about equal in the two operations, except in placenta previa where it is less in the abdominal operation.

Infection is less likely to occur during the abdominal than during the vaginal operation, but if it does occur the results are more apt to be disastrous after the abdominal operation. There is more danger of postoperative infection in the vaginal operation. Preexisting infection adds to the risk of both operations but probably more to the vaginal than to the abdominal.

The probability of untoward remote results is probably equal in the two operations and great in neither.

The maternal mortality of the two operations is probably about the same. The maternal morbidity in the abdominal operation is less than in the vaginal.

The fetal morbidity and mortality of the abdominal operation is practically nil, that of the vaginal operation is slightly less than that of accouchement forcé. The majority of patients would probably object less to the vaginal operation.

#### CONCLUSIONS.

1. Given a living and viable child the abdominal operation should be the operation of choice except in women with relatively large pelves and vaginæ.

2. This exception does not apply in placenta previa. It is extremely doubtful if vaginal Cesarean section is ever indicated in placenta previa.

3. The vaginal operation should be the operation of choice in cases in which a quick delivery is necessary and the only obstacle to delivery is an undilated os. In many multiparæ for instance the vaginal operation is to be preferred.

4. The presence of infection in a given case should not decide us in favor of either operation, but the fact that its existence adds to the mortality of both, should admonish us that neither are to be regarded as operations of *dernier ressort*.

5. With a dead or dying mother, and a living, viable child, the abdominal operation should be done.

6. A correct knowledge of the indications for these operations and a timely resort to them will materially reduce both the maternal and fetal mortality and morbidity which now obtains in obstetric practice.

207 WEST WAYNE STREET.

## METHODS OF DRAINAGE IN PELVIC AND ABDOMINAL SURGERY.<sup>1</sup>

BY

J. F. BALDWIN, A. M., M. D.,

Surgeon to Grant Hospital.

Columbus, Ohio.,

THE objects of drainage in abdominal and pelvic surgery are two-fold,—either, first, to drain a cavity from which we expect more or less discharge of some sort during the following few hours or days; or, second, to keep healthy tissues from contact with unhealthy surfaces so as to reduce to a minimum the possibilities of infection, or of undesirable adhesions.

As an illustration of the first class may be mentioned abdominal pregnancy, in which the sac where the fetus has been resting may need drainage for several days before its surface will be in condition to adhere. In the same class would come those rare instances of ovarian tumors in which marsupialization may be necessary. We see the same also in our cases of cholecystotomy, in which we expect drainage to ensue for days or weeks after the removal of the stones.

The most frequent uses for drainage, however, will come in the second class, and include cases of pelvic inflammatory diseases in which extensive raw surfaces are left, and especially those in which the remaining surface has been a part of the wall of an abscess. Another very common need is in cases of appendicitis with gangrene or rupture of the appendix, and with more or less extensive pus formation.

In cases in which we have a large raw surface, which cannot be covered by peritoneum, the oozing fluid forms an excellent nidus for infection, while at the same time loops of intestine coming in contact with these raw surfaces are likely to form very extensive and dense adhesions, which may interfere permanently and even disastrously with peristalsis. If these surfaces have in part formed the walls of an abscess, the danger of

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

infection is very great if a clean peritoneum comes in contact with them, while if no peritonitis is excited adhesions will be almost inevitable.

While the word drainage seems hardly appropriate in the latter class of cases, it has been employed so long that the use of the word seems to be established. Frequently, however, writers use the word "packing" instead of the word "drainage," and say that a given cavity was "packed with gauze." The latter word is, perhaps, preferable to the former, but is objectionable because the verb "pack," with its derivatives, means that more or less firmness has been employed in placing the material, as when a person packs a trunk; whereas, in using gauze for the purposes contemplated, the end is best accomplished if the gauze is placed in a fluffy way, so as to lightly support the parts, and give at the same time ample surface for the absorption of any discharge or exudate.

The older method of drainage, by which a tube of either rubber or glass was passed into the culdesac, at the lower angle of the incision, this tube perhaps being replaced after a little by a wisp of gauze, I never found entirely satisfactory. It required a good deal of attention on the part of the nurse, there was liability to infection, it left a weak point in the abdominal wall, and in a number of reported cases it resulted in a fecal fistula. Such drainage passes through considerable territory previously free of infection, and increases materially the danger of ileus, since loops of small intestine will be in contact with the tube, and adhesions involving the small bowel are much more apt to make trouble than similar adhesions involving the sigmoid.

In an ordinary pus tube case, acute or chronic, we find the pelvis filled with the distended tubes, bedded in exudate with their corresponding ovaries, which may or may not be infected, the retroverted uterus being probably involved in the common mass. In operating upon these cases the lines of cleavage are found so that the general mass is lifted up and forward, then the tubes are removed, with or without the ovaries as the case may require, and hemostasis secured in the ordinary way. If the operation has been successfully performed, the tubes have been enucleated without rupture; but frequently, in spite of every care, rupture has taken place, with the escape of more or less pus which is or is not sterile according to circumstances. If there has been no escape of pus we simply have a raw surface left, which by no possibility can be covered by peritoneum,

unless the retroverted uterus is again dropped back, and the peritoneum from in front stitched to the sigmoid and tissues behind. Such a reposition, however, leaves everything in bad condition, and is, of course, undesirable. If pus has escaped, it will usually be sterile, and will do no harm, but of its sterility one can never be quite sure, hence must always guard against the possibilities of infection. It is in these cases, therefore, that drainage of some sort is of very great importance if the best results, or even good results, are to be obtained. If this drainage, or packing, or "fluffage," if I might be permitted to coin a word, is resorted to, and the end of the gauze brought out at the lower angle of the incision, we not only have necessarily left a weak point where a hernia may develop, but the discharge must run up hill, and when the gauze is withdrawn the last point to heal—namely, the opening in the abdomen—is in exactly the wrong place.

In these cases, therefore, I have for many years opened the vault of the vagina, having previously always thoroughly washed out the vagina in anticipation of such use, and then passed the end of a strip of iodoform gauze from above downward through this opening, after which the rest of the gauze is packed in, in as fluffy a way as possible, so that the denuded or infected surface is entirely covered by the gauze. This covers the denuded posterior surface of the uterus, as well as the other boundaries of the pelvis, and on this are carefully arranged the ovaries and the sigmoid flexure of the colon. The omentum is also brought down in front, and arranged so as to cover any interstices which may be left. If the operator fears some disarrangement a few catgut stitches can be used to catch the parts together. We thus secure a complete floor of the abdomen, and a complete roof of the pelvis. No peritoneum comes in contact with raw or infected surfaces. After the "fluff" drainage is thus in place, and the toilet of the pelvis completed, the abdominal incision is closed in the operator's customary way.

After the operation is finished the vagina is carefully wiped out so as to free it of any blood or pus. The piece of gauze protruding at the opening in the vault is brought down a little, so as to be readily caught for removal, and another piece of gauze packed into the vagina. This second piece should be so introduced as to hold the cervix well up and back, so as to relieve any strain upon the fundus. This second piece of gauze can be removed in two or three days and, if there is much discharge,

creolin or other antiseptic douches can be used, until at the end of a week the first piece is withdrawn; after which ordinary sterile douches can be used for cleanliness until healing is complete. If the opening at the vault has been made of good size there is no retention whatever and the entire cavity rapidly closes.

Any pus which may be present is absorbed by the gauze, and the same is true of any oozing of blood. Within a very few hours the tissues on top of the gauze have adhered together, and a firm barrier is thus presented to any infection from below. At the end of a week this roof over the gauze is thoroughly established, and the gauze can then be removed safely, and with a minimum of discomfort to the patient. Care should be taken that the opening into the vault of the vagina is of ample size, so that the gauze may be removed easily, and that the opening may not close until the tissues above have sunk down so as to obliterate the space formerly occupied by the gauze.

In removing the tubes great care is taken to see that each is removed thoroughly into the horn of the uterus, so that there will be no lumen left to serve as a nidus for trouble. This removal leaves a V-shaped gap into which is brought a loop of the round ligament and fastened by a continuous chromicized catgut suture, which includes both flaps and between them the loop of ligament. In this way no raw surface is exposed and the ligament is firmly attached. If it seems wise to still farther hold the fundus forward the uterovesical fold is detached with care and reattached at the fundus.

It is well known that in cases of pelvic infection operation during the early stages of the disease has usually been attended with quite a pronounced mortality. For these reasons a number of abdominal surgeons have recommended that the patient shall be kept at rest, and nothing done until the acute stage has passed and the conditions have become chronic. In this way it is claimed, and undoubtedly with truth, that the mortality is greatly reduced. The objection to this delay, however, is that tissues which when the patient first comes under observation are healthy, become involved in the infection as the days and perhaps weeks go by, so that the final operation requires much more extensive sacrifice of parts than would an earlier operation. That is, what were originally tubal abscesses may become tubo-ovarian abscesses, requiring the sacrifice perhaps of all the appendages. By the method of treatment suggested above,

early operation may be undertaken without any fear of untoward results. Prompt convalescence may be confidently expected, and we may be sure that viscera will be saved that would otherwise be lost.

In cases of appendicial abscess, the usual methods of drainage are so satisfactory that nothing remains to be said; but in cases in which the abscess is small, or is not found directly under the line of incision, it is frequently much better to drain with a wick passed through a stab incision to the outer side, so that the primary incision can be completely closed. The stab incision is small, and is made through thick tissues, so that there is practically no danger of hernia.

In treating these local infections of appendicial origin, and the same is true of pelvic abscesses, it is frequently advantageous to wipe out the cavity and the infected area with a weak solution of the tincture of iodine. After the iodine has been thoroughly applied, and the tissues wiped dry, the drainage wick can be introduced and brought out through a stab incision, and, before more pus will have formed than can be taken care of by the gauze fluff, adhesions will have formed around the gauze to protect the general peritoneal cavity.

In a few cases I have had occasion to reopen the abdomen, months or years after this operation, and have been surprised to find how natural the culdesac looks. The peritoneum has reformed, the uterus is up in good position, no loops of intestine are found adherent, and all the parts seem to be thoroughly restored to a normal condition. In not a single instance have I had any ileus to contend with.

125 SOUTH GRANT AVENUE.

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## A NOTE ON POST-PARTUM HEMORRHAGE.<sup>1</sup>

WITH TWO QUICK WAYS OF MEETING IT.

BY

DOUGLAS H. STEWART, M. D.,

New York.

AN attentive and discriminating ear may sometimes distinguish a certain tone in a speaker's voice which evidences that the man is only uttering words, but the brain behind the voice has no conception of the ideas expressed in those words. As an instance we have but to recall medical student days and our

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

stumblings over physical diagnosis and its "percussion note" and "pitch." How glibly we talked of high and low and how we tried to persuade ourselves that we understood, as we repeated what the books said! How we hammered on chest, thigh, abdomen, walls and tables till our fingers were sore! How in answer to eager questions, our teachers made things muddy by explaining that "pitch" had nothing to do with "quality"; not one had gumption enough to tell us to "sing the note."

Well, all through that time of darkness our words were clear but our voices had the tone-quality alluded to and that quality marked our utterances as mere "student-patter" of bright sentences but dim understandings; of correct verbal explanation and very limited mental comprehension.

The same old student-patter and the same old tone and inflection may be found to-day when the average physician speaks with assumed familiarity on the subject of post-partum hemorrhage. A listener who has managed just one first class hemorrhage of this sort, and who knows, and who knows that he knows, how deep the accompanying shock is, will have conveyed to his ear that peculiar impression of words, combined with his mental concept, that the speaker never saw a genuine instance of post-partum hemorrhage in his whole life. He may, however, discover much grim humor in such statements as "ten minutes were well spent in hand-sterilization," when the emergency that he himself met gave him scarcely time to remove an overcoat, and he may smile silently at the idea of any leisurely procedure in face of a hemorrhage which he found, possibly, but little less rapid than decapitation in a fatal issue. Death is possible even though every facility, assistance, and management are within easy reach; and it is accompanied by peculiar sadness inasmuch as labor has been completed and a motherless child is left.

Treatment begins with precaution; and an excellent preventive is a cupping glass to each breast. These should be at once applied when the head is delivered, if the labor has shown any symptoms of uterine inertia, or even if progress has been slow or exhausting to the mother. The uterine contractions produced are clonic and therefore simply reinforce nature's processes in a natural way. I am informed that among savage peoples if there is any delay in the delivery of the afterbirth the child, or even another and older infant of some other woman, is at once put to the breast. I have tried it several times but it should never be combined with Credé's method. The one should, or

may be, used after the other but if both are used simultaneously the placenta is expelled with force. Some of the membranes are torn off, hence remain behind. This happened but once in my practice and then through the enthusiasm of an assistant; the placenta fairly jumped out of the vulva, examination showed most of the membranes, or at least most of their hanging ends, missing—and owing to the weak condition of the patient curettage was not done for seventy-two hours; but then the dull wire curet and the finger removed just about what might have been anticipated. Strange to say there was no alarming or even noticeable excess of bleeding and the uterus was well contracted. The cupping glasses are good but they are nothing like so prompt, neither are the contractions so powerful, as those resulting from suckling a child. In other words they are substitutes used for reasons of availability and diplomacy.

Credé's manœuvre has an established value but as sometimes misused it is unnecessary traumatism; it has a proper time, place and mode of application, and it is something very different from driving the clenched fist into a woman's abdomen at the end of the second stage of her labor. If the squeeze of the operator's hand but slightly reinforces the natural uterine contractions, in such a manner that only the weight of the hand rests on the fundus during the quiescent interval, and the thumb and fingers execute a sort of rolling-kneading movement during the active period then the results are usually excellent. The point to be emphasized is that the Credé's method properly applied is what is known by masseurs as "simple petrissage" and it is never "compound petrissage" or any other proceeding which would either squeeze the uterus against the spine or cause fatigue of the massaging hand; and, furthermore, the desired uterine action bears no proportion to the force employed, therefore petrissage is more effective than violence or force which can only produce traumatism directly, and the issue sought, only crudely.

Ordinarily there is a distinct advantage in giving the patient a rest of forty-five minutes after delivery of the child, if she can get so much repose, for nature sometimes intervenes, and during this period watch, or have an assistant watch, the pulse primarily, the uterus secondarily, and both carefully. A pulse rate under 105 evincing a tendency to fall means that the uterus will care for itself. On the contrary a rate of 105 or over maintained for ten minutes is the largest kind of a danger-signal. It means that

massage of the fundus and all appropriate means should be at once initiated. It has been urged against allowing a little rest to an exhausted woman that it leads to a partial separation of the placenta and the accumulation of blood behind it, but a placenta generally does begin to separate partially and the partial separation extends until complete; but I never have heard that any hemorrhage visible or concealed, external or internal, could be very urgent, or large, without affecting the pulse.

Experience with the Rose bandage leads me to think that a lax abdominal wall is an important factor in causing hemorrhage; as when this bandage is applied after ordinary labor, there is nowhere near the amount or duration of flow that there is without it. In post-partum hemorrhage it should not be used until the danger is past and the uterus contracted. Its advantages are: it holds the abdominal organs in place, it produces necessary pressure on the nerve plexus along the aorta by taking up the slack left by the disappearance of the pregnant mass, it equalizes the abdominal circulation and probably through this stimulates the abdominal brain into action and thereby maintains firm uterine contractions.

It may not be generally known that an ounce of vinegar administered by the mouth will result in a prompt and firm contraction of the uterus. Ergot works better on a full uterus, vinegar on an empty one, otherwise the results are similar. Should the patient be unable to swallow, then lift the fundus against the anterior abdominal wall, rub and push the intestines up, out of the way, and through the linea alba and into the substance of the uterine wall inject a hypodermic syringe of filtered vinegar. The process is quite easy and as to bad effects I have never seen or heard of any. The abdominal wall is thin and relaxed and of course easily manipulated, and ordinary aseptic precautions are to be observed. Action upon the uterus should begin in ninety seconds and should be progressive. As soon as the patient can swallow administer the vinegar by the mouth, and then the contractions should quickly become tonic. This expedient is valuable in hemorrhage occurring some hours after delivery. It does not necessitate the introduction of hand or instrument into the parturient canal.

Should the emergency threaten while the accoucheur is in actual attendance, and while he has everything aseptic, let him take a small wipe, fasten it securely to a vulsellum forceps, soak it in chloroform, squeeze out the drip, introduce it up to the

fundus, give it a turn or two and then withdraw it rapidly or he will have trouble removing it, so speedily does the uterine contraction follow that from seventeen to twenty seconds elapse before definite results are manifested. Chloroform seems to stimulate the uterus, to clot the blood, to make tampons in the mouths of gaping bloodvessels and to squeeze those openings shut, all at the same time.

In a severe case of post partum hemorrhage a man needs all the expedients of which he has knowledge, and perhaps a few additional ones. One he certainly cannot be too familiar with and that is cording the extremities.

#### SUMMARY.

1. The term post-partum hemorrhage should be applied solely to a flow of blood after delivery, 1,000 c.c. or more in amount, which blanches the lips, produces air hunger, and which gives rise to the pulse symptoms of severe hemorrhage. Other bleedings occurring under similar circumstances are properly named "excess bleeding," "threatened post-partum" or "traumatic hemorrhage" as the case may be.

2. A good precaution is to allow the mother forty-five minutes rest after delivery of the child.

3. A hemorrhage occurring some hours after delivery may be checked by the administration of an ounce of vinegar by the mouth. If this fails a hypodermic injection of the same, into the uterine wall is an efficient means of meeting the emergency.

4. A Rose bandage will hold the patient safe, after bleeding has been checked.

5. Threatening or actual hemorrhage at the immediate completion of labor may be forestalled or checked by the application of chloroform to the interior of the uterus, without the sticky black gum consequent upon the use of Monsel's solution or other iron preparations for the same purpose.

6. The writer simply desires to add to other more or less valuable means two simple ones which have served him well, so far at least, in dealing with this rare but always possible condition. However when it does occur it presents a picture which is finely described by Withington of Boston in these words:

"If the bleeding is not stopped the patient dies at once, even in the midst of the gratulations of her friends on the apparently successful completion of her labor."

A CASE OF HEMATOMA OF THE ABDOMINAL WALL  
SIMULATING A DESMOID TUMOR.\*

BY

SOLOMON WIENER, M. D.,  
Assistant Adjunct Gynecologist, Mt. Sinai Hospital,  
New York.

ALTHOUGH there are many varieties of tumor of the abdominal wall, it is not common to meet with them even in a large hospital service. Their diagnosis often presents very difficult problems, and it is by no means always easy even to determine whether the tumor be intramural or intraabdominal.

According to Pfeiffer, who collected a series of 400 cases of desmoid, this is by far the commonest variety of tumor of the abdominal wall. He found that desmoids are seven times as frequent in women as in men; 94.3 per cent. of them occur in women who have born children, and they are usually first noticed after delivery or after some slight trauma. In 72 per cent. of the cases they occurred below the level of the umbilicus, and the majority were situated on the right side.

Hematomata of the abdominal wall, other than such occurring during convalescence from typhoid fever and such as are due to direct injury, are exceedingly rare. Taking these facts into consideration, the following case becomes of considerable interest from the view-points of pathogenesis and of diagnosis.

Mrs. Bessie V., æt. forty-two; no history of tuberculosis, syphilis, or typhoid fever. Family history negative. Patient had always enjoyed good health. Married twenty-seven years; eight children; last child six years ago; labors normal and easy; no miscarriages.

Menstruation regular every four weeks, lasting five to six days; flow moderate. Last menstruation two weeks previously. Six weeks before examination patient had slipped and fallen *on her back* on a wooden floor. At that time she had slight pain referred to the lower abdomen, but paid no further attention to it, as it soon subsided. For three weeks she had experienced occasional dull pain and for several days had noticed a swelling of the right side of the abdomen. There had been no vomiting, no disability, no disturbance of urination or defecation. She sought advice solely because of the presence of a palpable tumor.

\*Presented at the Section for Gynecology and Obstetrics, New York Academy of Medicine, October 28, 1909.

The patient was referred to the writer as a probable case of fibroid tumor of the uterus, although there was some doubt as to the diagnosis.

Examination revealed a stout woman in excellent general condition, with no signs of organic disease. No fever. The right lower quadrant of the abdomen bulged slightly. On palpation there was a smooth, rounded, not very sharply defined mass, about the size of a closed fist, extending from just below and to the right of the umbilicus to just above Poupart's ligament. It was firm, not elastic, not tender. When the patient contracted her abdominal muscles, the mass became less distinct, but was still palpable. It was slightly movable from side to side, but not from above downward. It did not move with respiration. Percussion over the mass gave a dull tympanitic note. The thickness of the belly wall made palpation very difficult and unsatisfactory.

On bimanual examination the mass was much more distinctly palpable; it felt very hard, not elastic, not tender. If the patient relaxed, it could be pushed down into the pelvis by the examiner's abdominal hand; still it gave the distinct impression of being between the layers of the belly wall.

The uterus was small, retroverted, freely movable; the adnexa not distinctly palpable. There were moderate cysto-rectocele and bilateral laceration of the cervix.

During six days' observation there was no change in the size or consistency of the tumor. The preoperative diagnosis was "desmoid tumor."

*Operation.*—Vertical incision made just within outer border of right rectus muscle. After dividing the skin and superficial fascia, the rectus sheath and aponeurosis of the external oblique were bulged forward by a purplish mass underneath. The tumor still felt solid, there was not the slightest fluctuation to be obtained anywhere; it apparently infiltrated all surrounding structures. If we were dealing with a sarcoma, a very wide and mutilating extirpation would be necessary. It was therefore deemed wisest to make an exploratory incision directly into the mass to determine its character. Accordingly the anterior rectus sheath was incised and the muscle bluntly divided. In so doing a cavity was penetrated from which about a pint of old clots and tarry blood was evacuated. The main cavity was situated between the rectus and its posterior sheath; there were several side pockets branching out into the belly of the rectus. There was no distinct lining membrane and the muscle fibres forming the wall of the cavity were of a dirty greenish-gray color, ragged, and felt soft and degenerated. Several pieces of muscle were removed for examination. (Pathologist's report: chronic inflammation.) Cavity irrigated out with salt solution. Cigarette drains and small gauze packing introduced. Wound sutured in layers. Primary union except for drained area; wound entirely healed in two weeks.

*As to the Diagnosis.*—In this case it was comparatively easy to differentiate the tumor from an intraabdominal one. The fact that it remained palpable during contraction of the recti, its mobility while the muscles were relaxed, and fixity when they were contracted, together with the evidence obtained on bimanual examination, clearly pointed to its true location. The differential diagnosis as to its nature was by no means so simple. Of the causes of tumor formation in this locality, abscess, gumma, tuberculosis, hydatid cyst, lipoma, or actinomycosis hardly came into consideration. They were readily ruled out by the history and the physical signs. There remained only a metastatic growth, desmoid, and hematoma to differentiate between. In view of the excellent general condition of the patient, and the absence of all other local signs and symptoms, a metastatic growth could fairly be ruled out. Of course the history of the six weeks previous fall on her back might be considered to point very strongly to hematoma. Yet the well-known frequency with which patients first notice solid tumors after some slight trauma, the location of the mass, and, above all, its physical characteristics, pointed very strongly toward its being one of the latter. Our mistaken diagnosis, in which several gentlemen of large experience concurred, makes it seem well worth reporting the case lest others fall into the same error.

As to the pathogenesis, there can be but little doubt that when the patient slipped and fell supine, the rectus muscle was subjected to a sudden violent stretching between its fixed points of origin and insertion, with rupture of some of its posterior fibers, and possibly also of some branch of the deep epigastric vessels.

In this connection it is interesting to note that Virchow pointed out that rupture of the rectus usually occurs on its posterior surface.

To what extent the repeated stretching of the rectus, incident to numerous pregnancies, predisposes to subsequent ruptures of its fibers, is too large a question to enter into here. The literature is not rich in cases similar to this one. I have been able to find four reported. Stoeckel cites two, both occurring during pregnancy. The first case was a para-IV, six months gravid. During a severe attack of coughing, she experienced sudden sharp pain in the right lower abdominal quadrant, with gradual formation of a swelling. The pain subsided in the course of several days. Examination showed a large fluctuating swelling extending from the groin almost up to the umbilicus. On incision this proved to be a hematoma.

The second case was a para-VI admitted to the hospital with the history that two weeks previously, six days before delivery, she "felt something tear" in the right lower abdomen, during an attack of coughing. Immediately after a swelling developed which gradually increased in size. There was a tumor the size of a child's head extending from just below the

right free border of the ribs to the level of the umbilicus. It was fluctuating and tender. Evidence of a hemorrhagic diathesis was given by petechiæ on the extensor surfaces of the extremities and on the chest wall.

In both these cases the diagnosis was rendered easy by the distinct fluctuating character of the tumors.

A case presenting far greater difficulties was reported by F. D. Bird. A woman, aged sixty, while making a strong muscular effort experienced some pain below the umbilicus. Examination several days later showed a large tumor which could be freely moved laterally, but not vertically, and passed down by a long thin pedicle to below the pubis. It was very difficult to determine whether it was not an ovarian tumor with a pedicle. The mass was very hard and "felt like a sarcoma." On bimanual examination it fluctuated only at one small point. Incision through the sheath of the rectus showed clots and tarry blood.

A case cited by Lehman was of practically the same etiology as ours. A middle-aged woman had stumbled and fallen on her back. She felt some slight abdominal pain, but was able to raise herself at once. Ten days later, examination showed an ovoid swelling of the right side of the abdomen; the rectus muscle apparently stretched over it and it disappeared when the muscle was contracted. Lehman made the diagnosis of hematoma. Under palliative treatment, everything disappeared except a small "hard knot."

It is unfortunate that the diagnosis was not here confirmed by operation.

*A final word as to Treatment.*—This should consist of incision and drainage whenever the hematoma is large. Even if the greater portion of the extravasated blood may become absorbed under palliative treatment, it is almost inevitable that considerable fibrous scar tissue will develop. It is quite probable that just in this locality such scar tissue may serve as the predisposing cause for the formation and growth of a more or less malignant neoplasm.

#### REFERENCES.

- Bird, F. D. *The Lancet*, Sept. 27, 1902.  
Lehman. *Zeitschrift f. Geb. u. Gyn.*, vol. xli, page 517.  
Pfeiffer. *Beitr. zur klin. Chirurgie*, 1904, vol. xlv.  
Stoeckel. *Centralblatt f. Gyn.*, 1901.  
67 WEST EIGHTY-NINTH STREET.

CARIES OF THE HYOID BONE.<sup>1</sup>

BY

JOHN EGERTON CANNADAY, M. D.,

Surgeon to Charleston General and McMillan Hospitals.  
Charleston, W. Va.

Most authorities state that the hyoid bone at times may be fractured by hanging or other forms of strangling. A case of primary acute periostitis, followed by abscess, incision and recovery, has been reported by Stetter. Ullman reports a case of caries of the hyoid with subsequent fistula in a man forty years of age. The fistula remained after incision of a small abscess on the right side of the neck four years previously. In this case the necrotic portion of the bone was resected. Fracture of this bone is peculiarly dangerous and, in many instances, death has followed the complications. The ecchymosis may cause great difficulty in swallowing, talking or breathing. From its protected position the bone is seldom affected by external violence.

Inflammation of the bone may be the result of external violence or constitutional disease and usually begins as a periostitis with localized pain, swelling, dysphagia and dyspnea; suppuration and necrosis of the bone are apt to follow. These processes are usually limited, though the whole bone has been known to die and be cast off. After extrusion of the sequestrum the functions of the bone appear to be but little impaired. Tumors of this bone are most unusual, but five or six having been found in the literature; benignancy and malignancy seem to be about equal and death has followed removal in at least one case. Death occurred in another case from pressure before any operation could be undertaken. Secondary growths in the hyoid are of great rarity. The primary tumors reported are enchondroma, osteoma, and sarcoma.

Syphilis of this bone usually shows itself in the form of painful periosteal nodes which may cause interference with swallowing. After surgical or accidental interference with this bone tracheotomy may be necessary to prevent asphyxia and the stomach tube may have to be used in feeding the patient, as there may be inability to swallow on account of the swelling.

Patient L. F., a healthy young woman of excellent habits,

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

aged twenty-eight, somewhat corpulent, was referred to me by Dr. T. L. Barber, Charleston, W. Va. On examination, a sinus of the neck was discovered opening just above the thyroid cartilage, leading inward and backward to the hyoid bone, which was distinctly carious. The sinus had resisted treatment since the patient was four years of age. No history of accidental injury could be elicited.

*Operation.*—A general anesthetic (chloroform) was administered and an elliptical incision was made around the skin orifice of the sinus; this cut was prolonged at the ends to gain room and the sinus was dissected down to the body of the hyoid without opening. The posterior periosteum of the body of the bone, together with its muscular attachments, was stripped away and the bone removed. A small portion of each cornu was left behind. Hemostasis was secured. A small rubber tube drain was carried down to the bottom of the wound and brought out through a stab opening below the line of the incision. The subcutaneous structures were brought together by a buried suture of plain catgut and the edges of the skin incision were approximated by a subcuticular linen suture. The neck was encased in a so-called mummy dressing. Healing by primary intention took place. Beyond a little soreness for a few days there has not been the slightest interference with any of the muscular functions dependent on the hyoid for attachment.

*Pathologic Report.*—This was made by Dr. G. B. Capito. Tuberculosis was suspected but no giant cells or other evidences of tuberculous infiltration were present. The bone was decidedly carious. The sinus walls only showed the characteristic appearances of chronic inflammation. The area of infiltration was small and practically limited to the immediate vicinity.

COYLE AND RICHARDSON BUILDING.

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## CORRESPONDENCE.

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### SOLILOQUY OF A FALLEN WOMAN.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.  
MY DEAR DOCTOR:

In connection with my article on Prostitution which I read in March before the Society for Social and Moral Prophylaxis, I endeavored to get as complete a bibliography as possible of all works relative to that subject. Of necessity some were not included, and among these there has recently been sent me by Dr.

Victor C. Lyon, of this city, a duodecimo volume published privately by M. C. Jordan & Co., New York, 1868. As a bit of literature it is worthy of preservation, and as a contribution to the original subject-matter of my article it might also prove of some interest. It is, moreover, from the standpoint of a medical bibliophile, a great rarity. I hope you may feel inclined to publish it.

Very truly yours,  
HENRY P. DE FOREST.

OCTOBER 6, 1909.  
150 WEST FORTY-SEVENTH STREET,  
NEW YORK CITY.

### DEDICATION.

TO THE VIRTUOUS AND FALLEN OF BOTH SEXES.  
THIS LITTLE VOLUME IS RESPECTFULLY INSCRIBED, WITH THE REQUEST TO GIVE ITS FEW PAGES A CAREFUL PERUSAL, AND DRAW A NEVER-FADING MORAL FROM THEM.

### PREFACE.

The writer of the following poem—the only daughter of one of our esteemed and wealthy merchants—was reared in the most fashionable society of this city, obtained all the advantages of a splendid education, and once enjoyed all the happiness and luxury of a palace home—all the joy and love of an affectionate mother and a devoted father. Beautiful and accomplished, and as well guarded and cared for, as she was, in an evil hour the tempter came, in the form of an honorable man, who, at the time, held the distinguished position of a member of one branch of the National Assembly. By a pretense of love, and under promise of marriage, it was not long before he perceived his advantage in her innocence, and successfully accomplished his designs, leaving her a ruined, fallen woman! He still lives—a ravenous libertine!—and should his eyes fall upon these pages, we trust they will impel him to a realizing consciousness of the magnitude of this and many similar crimes. Should he pause to contemplate the results of his terrible work, so sadly exemplified in the wretched lives and deaths of his many beautiful victims—the idols and joys of their fond parents—may the pangs of his remorse be so deeply severe as to induce a regret and atonement for his past acts, and a resolve to lead a better life. She, whose wretched life and death have called forth these comments, died a short time since in a state of abject misery and poverty, and has gone where malice and unkindness can never touch her more. After one of her wild deliriums, caused by a malignant fever, and during a state of temporary reason, she composed these touching lines, which have since come into our possession through a mere accident. Her name, out of respect to her memory, and a regard for the feelings of her aged parents, we withhold. Hoping that many of those unfortunates whose daily lives are so elo-

quently portrayed in her poem will see the necessity of retracing their footsteps in life ere it is too late, and trusting it will deter as many more of the virtuous from beginning a career of human sin and woe, and thus save their souls from the vengeance of an offended God, we send our little book forth upon its way, relying upon the purity of our intentions, and a desire to do good, as a hopeful basis of success.

M. C. J. & Co.

*New York, January 25, 1868.*

"So, now I am at rest:—  
I feel death rising higher still, and higher,  
Within my bosom; every breath I fetch  
Shuts up my life within a shorter compass,  
And like the vanishing sound of bells, grows less  
And less each pulse, 'till it be lost in air.'" Dryden.

"And thou, enlighten'd earth, so fresh and gay!  
Ye hills and dales, ye rivers, woods and plains!  
And ye that live, and move, fair creatures! tell,  
Tell if ye saw, how came I thus, how here—" Milton.

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SOLILOQUY OF A FALLEN WOMAN  
OR THE  
LAMENT OVER VIRTUE LOST.

Of all the trades e'er tyranny devised,  
The most laborious and the most despised;  
Of all the lives of infamy and pain  
That wretches suffer for the lust of gain;  
Of all that mortals bear for passions sake,  
Or want impels mankind to undertake—  
To our unhappy sisterhood, alone  
No hope, no interval of ease is known;  
We change for ever; but whate'er our lot,  
We still from happiness are far remote.

Behold the picture on the brightest side,  
When life is flowing in a golden tide—  
When decked in glitter, elegance and show,  
And all around us pleasure seems to glow;  
While we indulge, ere yet our season flies,  
In every luxury that life supplies:  
They know but little who infer from this,  
That prostitution is a life of bliss.  
The gaudy baubles and the gay attire  
Are but the badges of a slave to hire;  
The smile that pleases is the smile of art  
To hide the anguish of an aching heart;

And our seeming gayety of soul  
 Flows from the vapors of the maddening bowl;  
 Our sole alternatives, so cursed we are,  
 Are but intoxication and despair.  
 The slave who digs, or at the anvil glows  
 Retires securely to his night's repose;  
 But in uncertainty our rest we take—  
 By noon we slumber, and by night we wake,

Although I stretch me on the bed of down  
 The couch of lewdness is not all my own;  
 I'm forced to share it, so severe my fate,  
 Not with the man I love, but him I hate.  
 The fond desire that sparkles in my eyes,  
 Is but to flatter him whom I despise:  
 With feigned affection, in my arms I fold  
 The wretch I shudder only to behold;  
 Not to the brave, the generous, and kind  
 Are my contaminated charms confined;  
 Submissive still to every lecher's call—  
 Enjoyed, insulted, and contemned by all:  
 Now to the feeble arms of graceless age,  
 And now subjected to the ruffian's rage;  
 The madman's fury, howsoe'er unjust;  
 The drunkard's humors, and the whims of lust;  
 And even his cruel appetite to please,  
 Who brings destruction, horrors and disease;  
 If erst, the blooming prostitute must live,  
 With all that wealth can buy, or beauty give.

If thus unhappy her most splendid state,  
 How much more gloomy in her humbler fate!  
 The many evils she sustained before  
 She feels more keenly, and a thousand more.  
 Of fickle fortune all the world complain,  
 But what so fleeting as the strumpet's reign?  
 By quick descent the fairest minion falls  
 From gilded canopies to clay-built walls;  
 In swift succession is the victim led  
 From silken sofas to the truckle-bed;  
 Her limbs, that rich brocades were wont to wear,  
 A rag scarce covers from the inclement air;  
 And she, who never felt the wind to blow,  
 Scarce finds a shelter from the frost and snow.  
 The generous wines, the viands rich and rare,  
 Are changed for hunger, or the coarsest fare.  
 Disease has stole the luster from her eye,  
 Her beauty withers, and her roses die;  
 In constant agonies she melts away,  
 And sinks beneath a premature decay.

Of her no watchful Providence takes care—  
 No hope supports—no God accepts her prayer—  
 No eye to shed the sympathizing tear:—  
 No helping hand—no kind consoler near:  
 In all the agony of death she lies—  
 Alone, unpitied and unfriended—dies.  
 Her guilty spirit quits her in dismay,  
 And vengeful demons seize it as their prey.  
*Chicago, Ill., Dec. 15, 1866.*

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IN MEMORIAM

M. J. D.

BORN IN BALTIMORE, MARYLAND,

JUNE 23, 1840

DIED IN CHICAGO, ILLINOIS,

DECEMBER 20, 1866.

AGED 26 YEARS, 5 MONTHS, 28 DAYS.

"What though no weeping loves thy ashes grace,  
 Nor polished marble emulate thy face!  
 What though no sacred earth allow thee room,  
 Nor hallowed dirge be muttered o'er thy tomb!  
 Yet shall thy grave with rising flow'rs be drest,  
 And the green turf lie lightly on thy breast!  
 There shall the morn her earliest tears bestow,  
 There the first roses of the year shall blow." Pope.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting of October 12, 1909.*

*The President, J. CLIFTON EDGAR, M. D., in the Chair.*

DR. A. BROTHERS presented specimens of

UTERUS BICORNIS AND UTERUS UNICORNIS.\*

DISCUSSION.

DR. CRAGIN.—It seems to me Dr. Brothers is to be congratulated in having two such interesting specimens to-night. I have had three interesting experiences with these uteri which perhaps may have some bearing upon this subject and be worthy of mention.

In the first one I supposed I was operating for fibroid tumor, as there was a separate mass fairly firm projecting from the side of the uterus. I did a myomectomy, as I supposed, and, after incising the mass removed, found it was a hematometra of one horn of a uterus bicornis; that is, there was no connection

\* For original article, see page 45.

between this one horn and the cervical canal, and the horn was distended with blood.

The other two experiences were from the obstetrical side. In one of them the nonimpregnated half formed a tumor obstructing the pelvic canal so that we had a marked dystocia. In the delivery, which was a difficult forceps, a split occurred between these two cornua—the pregnant and the nonpregnant—giving a complete uterine rupture. I realized the gravity of the situation, opened the abdomen, and sewed up the rent; but the shock was so great I lost the case.

The other case was one interesting for diagnosis. A woman presented herself, apparently with a normal pregnancy, but with a cystic mass at the side of the uterus. I suggested to the family that she might have a uterus bicornis, but I confess in my own heart I was rather inclined to believe it an adherent ovarian cyst, or a soft myoma. I had her go to the Sloane Hospital in order to be prepared for dealing with whatever might arise. She delivered herself without any difficulty, and then we found that the child was in one horn and the placenta in the other, and this placenta in the left horn had given the elastic feel which had led to the uncertainty in the diagnosis.

All these cases are interesting as Dr. Brothers' case is. I think he is especially to be congratulated on the second specimen. I have never met with one like it either in an operative or non-operative case.

DR. BROWN.—I can add a case similar to the two of Dr. Brothers. The instance in question was a vaginal hysterectomy by the clamp method and was at a time when this method was much in vogue. After the removal of the clamps, the leakage from the ureter of one side occurred. She was followed up with the understanding that after she was stronger the operation for repairing the ureter would be done. The leakage however ceased within a few months. My explanation at the time of the closure of the injury to the ureter was that it must be of a lateral character not involving the whole ureter.

DR. H. GRAD presented the report of a case of

#### TUBERCULAR SALPINGITIS AND OVARIAN CYST.

In gynecological cases, the history of the patient, the subjective and often the objective symptoms are at great variance with the pathological findings during operation. This is particularly so in tubercular infections of the genital tract of the female. The following is an illustrative instance.

Mrs. T., aged thirty-five, about six weeks ago consulted a physician. The consultation was sought solely on account of her sterility. She felt perfectly well, presented no symptoms of any kind, but sought advice as she had done at previous occasions, about her lack of fruitfulness. She had been married fifteen years and had never conceived. Her menstruation was always normal, of the four-weekly type, lasting three to four

days and attended by no pain. Her general health was good, but she suffered with constipation. She slept well, had good appetite, suffered no pain in her back. Her husband, somewhat older than herself, married her as a widower with three children, after a widowhood of only six months. This history of the husband is mentioned because it is considered of interest. The fact that he was the father of three children demonstrated his sexual capacity and the fact that he was a widower for only six months argues well against his being a victim of a gonorrheal infection. Her attending physician made a careful examination, but found nothing abnormal in the pelvis. The uterus appeared to be small with a pin hole os. The patient was advised to submit to a gradual divulsion of the cervix to which she readily submitted. The cervix was divulsed with graduated uterine sounds, at the office of the physician, the patient receiving four treatments in all. About two weeks after the last treatment she began to complain of pain in the abdomen, which gradually grew worse, and on one occasion during the night it became so severe that a hypodermic of morphine had to be given. It was also necessary to keep the patient in bed. A pelvic examination at that time revealed a tender mass in the pelvis, and the uterus could not be mapped out. The patient now practically became an invalid. She had constant pain in the abdomen, felt feverish, was unable to walk about, lost appetite, became sleepless with a feeling of general illness.

The patient consulted me at my office on July 30, 1909. Examination revealed a mass in the pelvis reaching half way to the umbilicus. The mass appeared to be one with the uterus, extending down into the culdesac of Douglas, it was tender to the touch but not exquisitely so. The physician in charge felt sure that the mass in the pelvis had grown very rapidly, that it was not there at one examination and was present at the next. From the history of the case the patient having been under observation for over forty days, and from the findings at the physical examination a diagnosis was made of pyosalpinx and a tentative diagnosis of possible ectopic gestation, in spite of the fact that we had to face a fifteen-year-old sterility. The tentative diagnosis of ectopic was made because of the rapid appearance of the mass in the pelvis.

The patient was referred to the hospital where it was found that her leukocytosis was 12,000 with a polymorphonuclear count of 78 per cent.

On August 3, 1909, under anesthesia the mass in the pelvis was found markedly bulging into Douglas' pouch. Pus being suspected, an exploratory puncture was made through the vagina, the needle was pushed into the pelvis, back of the cervix, in the median line. It was then found that instead of pus clear cystic fluid escaped through the needle. Instead of an abscess we had an ovarian cyst to deal with. The abdomen was immediately opened and a most interesting pathologic condition

revealed itself. I have endeavored to make a drawing of the case which I take pleasure in presenting. The right ovary was the seat of an ovarian cyst, the walls of which were highly inflamed, omentum and several coils of intestines being adherent to it. The ovarian cyst had grown so that the uterus had become imbedded in its mass. The right Fallopian tube, distended with pus, looking like a good-sized sausage, was adherent to the top of the cyst, and extended clear across the pelvis from right to left. A small pyosalpinx was also found on the left side. The ovarian tumor and both pus tubes were removed and

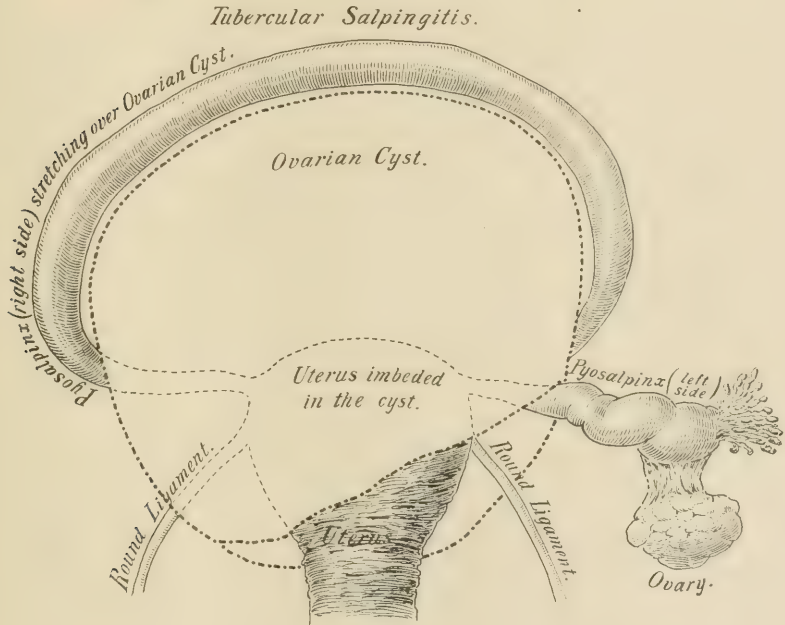


FIG. 1.

drainage provided for above and below. Had I known then that I was dealing with a tuberculous process I should not have used drainage, because these cases do better without drainage. The patient made an uninterrupted recovery and the pathologist reported that the case was one of double tubercular salpingitis.

In the female genital organs the Fallopian tubes are the parts most often affected. Orthman, writing in 1895, asserts his belief in direct infection from without, the vagina and uterus escaping damage from the germ. He believes that the tubercle bacillus may be introduced by instruments, by the exploring finger, and, it is believed, by the seminal fluid in coitus. Whitridge Williams, who is the author of an important work on tuberculosis of the female generative organs, is very cautious about the question of primary infection. He says: "The major-

ity of cases are secondary to tuberculosis elsewhere and are due either to infection from the blood or the neighboring organs. Even in the apparently primary cases it is impossible to exclude blood infection."

While the question of primary tubercular salpingitis may be raised, as no tubercular process can be discovered by physical examination, I do not believe that the case here reported is one of primary tubercular infection; I am inclined to believe that in this case a pyogenic infection was superimposed on a chronic tubercular process.

#### DISCUSSION.

DR. BROWN.—I do not believe that all authorities agree with Williams in the statement that tubercular salpingitis cannot result from coitus. I know when I had occasion to look up the subject of tubercular peritonitis last spring I came across one exhaustive article and quoted it at that time, in which there was marked evidence in favor of tubercular salpingitis resulting directly from coitus, and there were several instances cited, to my mind at that time, conclusive evidence of the existence of such a possibility.

DR. STONE.—Dr. Grad's explanation of his case is probably the correct one, that is, that there had been a tuberculous process in the tube which had existed for some time, and that an acute infection was superimposed. It is, of course, pretty well known that a tuberculous salpingitis is generally considered primary so far as the pelvic organs are concerned, and that it is usually a descending infection. It is most difficult in many cases in which tuberculous salpingitis of only a mild grade is found, to trace its origin, but it often occurs, and comes on insidiously. It is most probable that in this tumor also a tuberculous process had existed for some time before the acute infection arose. I would agree with what Dr. Brown has just said that occasionally the tubercular infection has come from without through coitus or otherwise. Dr. Coe had a case some eight or nine years ago of apparent tuberculosis of the cervix. I examined the specimen for him and there was no tuberculosis found in any other portion of the genital organs, or any history or physical signs of tuberculosis in any other portion of the body. The patient's husband was a perfectly well, strong man; there was no tuberculosis in the family and it was impossible to discover the origin of the process satisfactorily, but it was without doubt a primary tuberculosis of the cervix.

DR. STUDDIFORD.—I would like to ask whether any attempt was made to differentiate the type of bacillus, whether of the bovine or the human type?

DR. GRAD.—No, the pathologist did not attempt that.

DR. STUDDIFORD.—It might be interesting to know whether it did not start primarily as a glandular infection coming from the intestinal tract. I had opportunity to see a case at autopsy

this summer. She was operated by vaginal section eight months ago in Dr. Coe's service at Bellevue. The culdesac was bulging at the time; the woman was in bad condition, and a lot of clear serum drained away. Nothing further was done and the woman left the hospital. She came back during the summer in such condition that operation was out of the question, and died two days after coming to the hospital.

Upon autopsy it was found there was evidence that the trouble for which the original operation was performed was a left tubercular salpingitis in which the intestines were closely adherent, and involved in the tubercular inflammation. There was also an enlargement of practically all the retroperitoneal glands, some of them of very old standing.

DR. VINEBERG.—The most modern views hold that tuberculosis of the genital organs is never primary. Amman of Munich took a very pronounced view. Bollinger, the pathologist in Munich, said that 95 per cent. of cases coming to autopsy showed some tuberculous lesions of the lungs, so that any person is likely to have a secondary infection. Occasionally we come across a case which seems to be primary. Such a one I had a short time ago. A young girl had an erosion of the cervix which, when excised, proved to be tubercular. She has been under observation for some time now, has developed no mass and has had no lung disease so far as she knew.

DR. MABBOTT.—I would like to ask Dr. Vineburg whether his last case was a virgin.

DR. VINEBERG.—She was not married.

DR. LEROY BROWN presented two cases:

- (a) CARCINOMA OF CERVIX, WITH CARCINOMATOUS FOCI IN FUNDUS. (b) DIABETIC THROMBOSIS OF FEMORAL ARTERY.

Mrs. M. O'B., age forty-one, presented herself in my service at the Woman's Hospital with the following history:

Married, has had five children; the last one and one-half years ago. She has had a recurring bloody discharge for three to four weeks before entering the hospital, with considerable back-ache. Local condition was a badly lacerated and everted cervix, with torn perineum. The patient came to the hospital with the diagnosis of carcinoma of the cervix, made by an eminent skin specialist who had seen her shortly before. In view of this diagnosis, the pathologist of the hospital, Dr. Jessup, made at my request many frozen sections of the cone-shaped portion of the cervix removed at the time of operation on April 15. His report was: no carcinoma, only the pressure of chronic changes. A week later, a further section of the specimen, in the regular celloidin method showed small islands of carcinoma.

Dr. Jessup's report is as follows:

"Section of the anterior and posterior lips at the time of operation showed chronic changes (frozen section). Sections from four other portions of the cervix subsequently made by celloidin

method. Two of these blocks showed small islands of epithelial cells just below the surface epithelium of the cervix. Many mitoses in these cells.

The uterus was subsequently removed on June 16. No foci were found in the body of the uterus.

Mrs. M. S., age fifty-two, came under my care at the Woman's Hospital, April 7, 1909, with the following history:

She had given birth to eleven children, and was apparently in good health with the exception of having lost weight during the last three years.

The local condition was an umbilical hernia together with a cystocele. The constant pain in the site of the hernia, together with the symptoms resulting from the cystocele, caused her to enter the hospital for relief.

The urine showed 3 3/4 per cent. of sugar with no albumin or casts. Diacetic acid was absent. The general condition of the patient appeared to be good, and the per cent. of sugar decreased under diet. The symptoms being sufficiently urgent, I felt justified in operating eight days after her entrance in the hospital.

The hernia was repaired after the Mayo method. The cystocele was also repaired.

The patient followed the ordinary uneventful recovery until the third day, when she complained of pain in the popliteal space of the right leg. The pain was severe in character and continuous. The leg below the knee was blanched, and within a short time showed dark areas of commencing gangrene. Four days after the occlusion of the vessel, the urine showed diacetic acid.

The occlusion of the artery was ascending, resulting in the involvement of the leg below the upper third of the thigh.

The patient died on May 12, four weeks after the operation. The memory of the unfortunate outcome of this operation, and the terrible appearance of the daily increase of the death of the limb, is such that it cannot be forgotten. Frequent consultations were held, without avail, in the hope that surgery might offer some relief.

In former years the presence of diabetes in patients needing operations was considered a contraindication. Under this former custom, Kleen states that "many a surgeon has thus been saved, and many a diabetic patient who might have been saved by surgery has been sacrificed."

The present view that diabetics can be given the benefit of surgery with a reasonable successful outlook, is largely due to investigations in France.

The general opinion seems to be that acidosis and coma is more to be feared than the hyperglycemia. The occurrence of gangrene, as an operative sequence, does not seem to be of frequent occurrence in fatal cases.

My own opinion, based on my sad experience with this unfor-

tunate patient, is that, in addition to reducing the percentage of sugar by diet for at least two weeks, we should examine carefully the condition of the arteries for a premature endarteritis and sclerosis.

In the presence of such an arterial condition an operation should not be undertaken, even though the sugar can be reduced and acidosis is absent. In examinations of the femoral and radial arteries of my patient after the occurrence of the occlusion they were seen to be unusually small and sclerotic.

#### DISCUSSION.

DR. VINEBERG.—A woman came to me during the summer, past the menopause, bleeding slightly, and on examination on the posterior aspect of the cervix, the vaginal portion, there was a small lesion, not the size of a five-cent piece, even smaller than that, a vascular area which bled very readily. I had never seen any ordinary erosion bleed so profusely, and it looked suspicious. I excised it and sent it to the pathologist and his report was it was not a case of carcinoma. I asked him to be sure of his diagnosis because the clinical growth was such I felt it was not an ordinary erosion. Further examination with the microscope determined it was carcinoma. I removed the uterus and found it was the seat of an adeno-carcinoma; so here we had a carcinomatous uterus with implantation upon the posterior aspect of the cervix. This we can explain by the fact that the secretions would collect in the culdesac and come in contact with that portion of the cervix. It is the first case I have seen in which there has been an implantation on the cervix.

Perhaps we do not examine our cases sufficiently to get the very early cases mentioned to-night, but in all the cases which I have seen in which there might have been a carcinoma, the microscope was always in favor of endocervicitis, and in the cases in which a carcinoma was present the microscope was not necessary to make the diagnosis. So as yet I have never seen a case in which there was a suspicion of carcinoma of the cervix and repeated sections of the excised portion of the cervix would show a few nests of carcinoma. In other words, I have not thus far met with such a case of carcinoma of the cervix in its very early stage, and this may explain why I cannot recall a case of carcinoma of the cervix operated upon in which there has not been a recurrence within a year or two, or three at the longest.

DR. BARROWS.—Dr Broun's recital of the history of his second case made me believe that he was reading one of my own histories. I recently had in my hands a woman who presented almost exactly the same conditions. She was a large woman, weighing 285 pounds. She had an enormous ventral hernia. I kept her under treatment in Bellevue Hospital for four months prior to operation. When she entered the hospital she had about 4 per cent. of sugar with marked acidosis. Dr. Beebe saw her with me repeatedly. She was put on antidiabetic diet.

At the same time she was given thyroid of the sheep. At the end of about a month her sugar had disappeared and at the end of about four months she had been reduced to 225 pounds. She was apparently in excellent condition and everything seemed to be absolutely favorable for operation, and I did a Mayo's operation for the hernia. She did perfectly well up to the sixth day, when my house surgeon reported to me that he believed she had developed pneumonia. When I examined her, I found she had gangrene of the abdominal wall and she died on the ninth day. Autopsy showed large areas of gangrene throughout the peritoneal cavity.

DR. H. C. TAYLOR read the report of a case of

ECTOPIC PREGNANCY. REMOVAL OF PRODUCTS OF GESTATION  
WITHOUT REMOVAL OF THE TUBE.

This case is reported as an illustration of a class of cases in which the conservation of the impregnated tube and not its removal is indicated. The history of the case is as follows:

Mrs. A, aged thirty-two years had been married for five years and had had no children nor miscarriages; that is, never previously pregnant. There was a history of an attack of pelvic inflammation one year before admission to the hospital. The patient had menstruated normally every twenty-eight days, for four or five days moderately in amount, until July 16, 1909. This menstrual period was normal as to time, amount, and character. There was no menstruation at all during August. The patient began to flow on Sept. 2, and flowed until September 29, the date of her operation. On September 3, and on September 24, there was associated with the flow considerable abdominal pain in the left lower quadrant. The history then was typically that of an ectopic pregnancy. On examination, the uterus was found to be in its normal position, there was a small mass on the left side, another more indefinite on the right side of the pelvis. At the operation, performed by my house surgeon, Dr. Mills, under my personal direction, the abdomen was opened through a Pfannenstiel incision, the right tube was found distended with clear fluid and it, together with the right ovary, was removed. The left ovary was normal. The left tube was distended with an ectopic pregnancy to the size of a small hen's egg. The tube had not ruptured nor was the fimbriated end closed. The tube was incised, the pregnancy enucleated and the tube resutured.

There are two questions that could be asked in regard to this procedure. 1. Is the presence of this tube a danger to the patient? 2. Is the tube of any value to the patient? I think that the presence of the tube is not a source of danger to the patient. There should be no danger of immediate or of secondary hemorrhage. It is quite possible that some of the decidual elements were left in the tube, but I would not expect them to give any trouble. Beyond doubt there are many cases of ec-

topic pregnancy that never come to operation and the patients recover without further tubal trouble. There is no more reason why a case in which the gestation is removed surgically should give trouble. In regard to the value of the tube to the patient, it is of course true that the tube is not a normal one and that the lesion in it was such as to cause an ectopic pregnancy once. It does not however follow that an ectopic pregnancy would occur again. With the tube there is certainly a hope that the patient may have a child normally. This patient had never previously been pregnant, and it meant much to her that this hope should not be entirely removed.

#### DISCUSSION.

DR. BARROWS.—Is this the first instance in which an effort has been made to save the tube?

DR. TAYLOR.—No, I have done it before myself and I am sure it has been done by others.

DR. BRETTAUER.—About six or seven years ago, at our first meeting in the fall, our late member, Dr. A. P. Dudley, who had just returned from Europe, mentioned that he had seen Prof. Ohlshausen split a gravid tube.

I personally do not think this a safe procedure, as one cannot remove deep-seated chorionic villi in the tubal wall. I would only resort to it in exceptional cases, in which for some reason it is of vital importance that the possibility of future gestation is not precluded.

DR. DICKINSON.—If the other tube had been sound, would you have done that, or would you have taken it out?

DR. TAYLOR.—No, if the other tube and ovary had been normal, I certainly would not have followed this procedure. I do not think it wise to be too conservative, and I think one healthy tube is better than a healthy one and a diseased one, but in this case the other tube had to be removed, so it was a case of saving this tube or depriving the woman of the hope of ever becoming pregnant.

DR. R. L. DICKINSON presented a note on

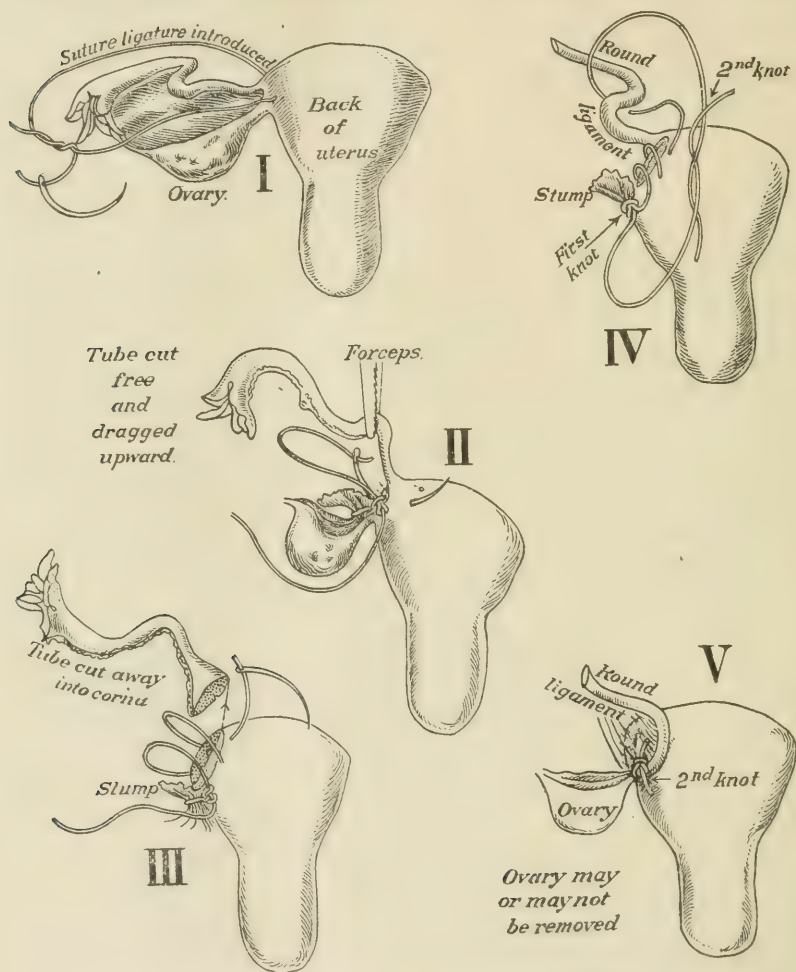
#### SALPINGECTOMY: A SINGLE-STITCH AMPUTATION.

If a single suture-ligature is used for the removal of the tube, including exsection of its uterine end, and covering in of the stump, it will shorten and simplify the procedure. It applies to salpingectomy for sterilization and to any small sactosalpinx.

The tube is seized by two catch forceps, one near each end. A catgut suture is passed from before backward at the outer side of the cornu of the uterus, taking in a little uterine muscle. The exact location is just above the uterine end of the utero-ovarian ligament. It is tied, between ovary and tube, to cut off the blood supply to the tube and the end is left long. Usually one tie is enough, but in case of a moderately thickened or

varicose broad ligament a figure-eight form of suture-ligature is to be preferred. The tube is then cut away. To give sufficient stump, and in order to prevent the ligature from slipping off, the cutting is done close to the tube.

The tube is now lifted and drawn upon. This pulls the cornu out. The needle is passed once or twice through the cornu, the



Dickinson—An expeditious one-stitch-two-knot amputation of the tube.

upper stitch being on the fundus between the median line and the tubal insertion. The loops of this continuous suture are left long and drawn to one side. The tube is dragged upward as it is cut off, and thus a hollow or recess is left in the cornu. The loops are now drawn taut. To cover in the raw surfaces with one more stitch, while using the same catgut, the round ligament

is caught half an inch or an inch from its uterine section. The free end of the catgut then is tied to the long hanging end left over from the first knot. Thus a single strand accomplishes three purposes.

It will be seen that by beginning the original stitch at the front of the uterus, the loop of the round ligament is drawn from in front of the uterus and over the incision backward by the final stitch with its knot at the back. In case of retroversion, more slack can be taken out of this ligament.

#### DISCUSSION.

DR. MABBOTT.—I think Dr. Dickinson should use the word "suture" rather than the word "stitch."

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON OBSTETRICS AND GYNECOLOGY.

*Meeting of October 28, 1909.*

JOHN O. POLAK, M. D., *of Brooklyn, in the Chair.*

DR. S. WIENER reported a case of

#### HEMATOMA OF THE ABDOMINAL WALL SIMULATING A DESMOID TUMOR.\*

#### DISCUSSION.

DR. SIDNEY D. JACOBSON said a desmoid is merely a fibroid tumor, harder in consistency and of closer texture than usual.

A desmoid might occur in any part of the body where connective tissue was found, but was most common in fascia and tendon.

A patient referred to him by Dr. Abel of this city was about thirty-two years old, married, and a multipara. For several years she had noticed a slowly growing lump in her right lower abdominal quadrant. Lately the skin over this growth became irritated by pressure of the corset.

Locally a round, smooth, hard mass the size of a large hen's egg was found. The abdominal wall not being very fat, diagnosis by exclusion pointed to the tumor being a desmoid of the abdominal wall and situated within or intimately connected with the transversalis fascia.

The reasoning which led to a determination of the exact location of this tumor rested principally upon the fact that when the patient's abdominal wall was made rigid, the mass could be moved in the long axis of the patient's body, but not at all transversely, or across her body; that is, the mass could be moved

\* For original article, see page 85.

across the fibers of the muscle or fascia holding it, but *not in the direction of those fibers*. As there exists in the abdominal wall only one structure in that locality, the fibers of which run transversely, it was plain that the tumor must be in the transversalis fascia.

The operation of enucleation was simple. The defect in the transversalis fascia was remedied by approximation to the outer edge of the sheath of the rectus muscle and healing took place *per primam*.

The patient is well and has since that time borne a living child without any sign of hernia.

Upon section with a knife the tumor presented a white, glistening surface and its tissue grated as it was cut. A small cube from its interior was examined microscopically by Dr. Jacobson and found to exhibit the characteristics of desmoid—spindle-shaped cells—in small numbers scattered through a dense stroma of parallel fibers very closely knit together.

To emphasize the difficulty in diagnosis of abdominal tumors, sometimes, Dr. Jacobson recited a case which he did not see until the patient had died.

A healthy man, seventy years of age, fell in the street on his back. As he developed symptoms of indigestion a neighboring physician was called in. This gentleman called a well-known internist to explain a tumor in the patient's right loin. The internist decided it was a malignant disease of the intestine and advised that a surgeon be consulted. A very well-known and able surgeon of the younger set was called and he diagnosed a cancer of the cecum, and in order that intestinal obstruction be avoided advised fluid diet only. Dr. Richard Stein was called, and doubted the correctness of the diagnosis of intestinal cancer.

The patient died and Dr. Stein requested Dr. Jacobson to do an autopsy to clear up the diagnosis.

At autopsy the peritoneum, cecum, prostate, right kidney, gall-bladder, liver, stomach, and the whole intestinal tract were found to be perfectly normal, but in the abdominal wall at the anterior edge of the right quadratus lumborum muscle was found a mass which upon microscopical investigation proved to be a mixed cell sarcoma.

This would be another case tending to prove the connection of traumatism and development of malignant disease.

DR. H. N. VINEBERG had operated upon two similar cases; in neither of these was there much difficulty in making a diagnosis. One case was a very extensive one and he experienced some difficulty in bringing together the muscles after the operation. As a rule, one must go quite deep into the tissues in the removal of such tumors. He did not recall any case of large hematoma of the rectus muscle resulting from a fall.

DR. S. WIENER said the suggestion made that the tumor should have been aspirated in order to aid in making a diagnosis was a good one, but the blood was so thick and tar-like

that it could have been accomplished only by the use of a very large aspirating needle. Moreover, even if some blood had been so obtained, they still would have considered that they had to deal with a rapidly growing, hemorrhagic, solid neoplasm.

DR. ARTHUR STEIN reported a case of

#### HEMATOMETRA IN AN AGED WOMAN.

The patient was sixty-six years old, a widow, housekeeper. She had had two children, the last thirty years ago. Her present illness began two and a half years ago; she had to urinate four and five times a day and three or four times at night. She had difficulty in urinating and had to strain in order to start the stream. She also had a burning sensation at the end of urination. She had no increased thirst, no loss in weight, no loss in strength, no bleeding, no leukorrhea, but she did have pain in the lumbar region which was dull in character. There was no edema of the legs. She noticed that her abdomen was getting larger. She had an external hernia on the right side about the size of a hen's egg. The external genitals were normal. The vagina was senile; the cervix was about one-half inch long and pushed backward. No body of the uterus could be felt. In its place was a large, round mass with smooth surface, which had the size of a median-sized cantaloupe. This was cystic and somewhat movable. The tumor occupied the whole small pelvis, and pressed down the anterior wall of the vagina. The diagnosis made was either myoma of the body of the uterus, or monolocular ovarian cyst with external inguinal hernia. A panhysterectomy was performed through a Pfannensteil incision. When the peritoneum was opened a large mass bulged into the wound and was found to be an enlarged uterus. It was accidentally punctured and blood of a chocolate-brown color poured out. It contained about twenty ounces of blood, and the sac was left collapsed. The whole uterus, as well as the adnexa, were removed, and the inguinal hernia was closed in the usual way. The microscopical examination showed nowhere any signs of malignancy in the body of the uterus; this was quite different, however, with the findings in the wall of the cervix. Instead of finding normal cervical glands, there were columnar cells in many layers, in some places still maintaining the glandular type; in others they had undergone metaplastic changes and were transformed into cells of the squamous type. After operation and microscopical examination the diagnosis was a large hematometra and adenocarcinoma of the cervix. The patient made an uneventful recovery.

In going over the literature of the past thirty-two years he was not able to find a similar case. All knew that hematometra was not at all common during the period of menstrual life or in childhood. Its causes were manifold. It might occur in young girls with an atresia of the vagina, or with an imperforate hymen, or with misshapen genitals. In women who had born children

it might follow inflammatory conditions during the puerperal state, or it might follow an inflammation of the vagina and cervix. The most important feature in the case reported was the fact that the patient had always menstruated regularly up to her forty-sixth year when the climacterium set in. She felt that her uterus was larger. One must assume that, twenty years ago, the cervical canal became obstructed through senile involution and that during the three years in which the climacterium was established the uterus became larger with each menstruation. From her fortieth year up to her sixty-fourth year she felt absolutely well in every respect. During the past two years she complained of bladder troubles. He asked how they could account for the bladder troubles detected only in the sixty-sixth year of her life. The vessels were found in a high grade of sclerosis during the operation; it might be possible that during the strain one of the vessels of the uterine wall burst and poured blood into the already distended uterine cavity. This would account for the pressure against the bladder. Again, as they were dealing with a carcinoma of the cervix, it was very likely that during its slow growth some of the vessels of the uterine wall became eroded and the blood had to pour into the uterine cavity. It was yet to be solved why the patient was absolutely well for about fifteen years after her climacterium.

DR. EUGENE COLEMAN SAVIDGE reported a similar case. A lady of position, sixty-five years old, came to his office apparently presenting an ovarian cyst, which she wanted removed. To learn position of the uterus, a sound was inserted, which was immediately followed by a terrifying gush of dark unclotted blood. He washed out the uterus, packed, and sent the patient to a neighboring hotel in a cab. She made a good recovery, the uterus coming down to nearly normal. Three years later, when sixty-eight, she had a similar occurrence, the uterus was again emptied as before. A third time the uterus filled up, the patient only being seen when her tumor became evident to her. There was no pathological report. There was no malignant condition. The patient died of diabetes some distance from New York about six years after first coming under notice.

#### THE CARE OF PREGNANCY AND LABOR COMPLICATED BY NERVOUS OVERDEVELOPMENT.

DR. FRANKLIN S. NEWELL of Boston read this paper. He stated that there was a widespread theory in the medical profession as a whole that the duty of the obstetrician was satisfactorily performed if the maternal life was saved. The life of the child was usually considered as a secondary matter and the after-health of the mother received little or no consideration from the average practitioner. No man should feel that he has conducted a case of labor properly in which a child which has reached a viable age is lost when he has had personal charge of the case throughout pregnancy and labor. A labor which

results in invalidism to the mother through lack of appreciation of the conditions present, due either to physical injuries, which have not received proper attention, or to nervous injuries through a blind adherence to a conservatism, which demands non-interference with natural processes, must be counted as a failure, and the obstetrician who can number many such cases in his practice should consider most carefully whether the reason is not his own unfitness for the work rather than the conditions which are present in the individual patients. Many serious injuries may be inflicted upon the child which may seriously affect its after-health. Each injury must be considered as at least a partial failure to conduct the case properly, unless before delivery the possibility of such injury is considered and the choice of treatment made freely with deliberate intent to run serious risks for the child for the sake of lessening the risk to the mother. The after-health of the mother is a consideration which should receive serious attention in each individual case, but which is seldom considered until too late. Each patient must be carefully studied, particularly in relation to her power of standing pain and what effect the long continued pain of labor may have upon her after-life. The nervous history of the patient must be studied to learn how she has endured such burdens as have been laid on her in the past. Is she nervously equipped to undergo what is usually a severe though not an overwhelming strain to the normal woman. If these questions can be satisfactorily answered the patient may properly be subjected to an ordinary labor and we have nothing to do except to foresee, as far as possible, the occurrence of possible complications of labor.

In considering the conditions which exist to-day we must recognize that the modern civilized woman is a doubtful risk nervously although she may be physically well equipped. It is therefore an important part of our professional duty to lessen the strain during pregnancy and labor by every means which modern surgical science has given to us, in order that the great event of her life may leave no serious after-effects. Tradition has been a large factor in obstetrics for many years and still continues to be so. This is because pregnancy and labor have so long been considered as natural physiological processes. This should be the case, but the changes which have taken place in the nervous organization of our modern woman, particularly the overeducated and overcivilized are so great that a large proportion have ceased to be natural women. The nervous organization has overshadowed and in many cases dwarfed the physical development. Every patient brought up under the conditions of our city life should be considered as abnormal unless she can be proved to be normal by the most searching examination. The small pay for obstetrical work among general practitioners and the fact that they frequently do the work only as a means of building up a family practice account for the scant attention that these matters generally receive. The careful

mensuration of the pelvis is admitted at the present time to be a part of the duty of every obstetrician, but the majority of practitioners lose sight of the fact that it is not the absolute size of the pelvis, except in rare cases which is important, so much as the relative size as compared with the individual child.

It is important to estimate the muscular power in the individual patient to find out whether a given patient is likely to be able to deliver herself without undue exhaustion, or whether the muscular power will fail before delivery is accomplished and operation become necessary on an exhausted patient. Another factor to be considered is the probable nervous resistance of the patient, whether she is liable to have a nervous explosion at the time of or shortly after labor, even though not physically exhausted, and whether the effect of pain and the exhaustion of labor may not have a lasting serious influence on her after-life. In the modern society woman these points are of considerable importance. It is necessary in each case to learn what the patient's previous life has been. In many cases it will be found that she has been subjected to such educational and social strain at the time of puberty and later that she is merely a bundle of nerves, reacting out of all proportion to every slight impulse even though she may be physically well developed. In addition to the improper conditions under which she has lived, the strain of entering society often has a serious effect. Such exercise as she has taken has been at the expense of proper rest and recuperation, and has been simply an added burden rather than a relaxation. It is estimated in Boston that the majority of girls who enter society have at least one or more nervous breakdowns, demanding a modified rest cure, before reaching the age of twenty-five, the time at which a woman should be at the height of her powers. The same may be said to be true of a large proportion of college women. A third group of women are those which have always been sickly and delicate, and who would never have reached maturity except for unusual care. The preservation of the unfit and the constant overstrain of those originally fit produce a similar result and produce a class of women who are bad subjects for pregnancy and labor. Another class which should receive careful attention are those who have shown no definite weakness before pregnancy and in whom during pregnancy no definite pathological conditions can be discovered, but who develop a lack of accommodation, if so it may be called, to pregnancy. These are the women who suffer from minor toxemic conditions, prolonged vomiting, and who do not improve physically during pregnancy as every woman should, but who are in a distinctly worse condition at the end than at the beginning of pregnancy. Often they are women who were unwilling or unable to take proper exercise during pregnancy and who came to labor in a poor muscular condition. It must be remembered that the cardiac muscles suffer in proportion to the general muscular condition, and acute cardiac dilatation with

its concomitant symptoms is a frequent result of the strain of labor.

The general indications to be met in the treatment of unfit parturient women at the present time may be divided into prophylaxis and palliation. There could be no question but that the pernicious influence of early education was one of the most serious factors with which we had to deal. The social standard was so definitely set that a girl's education was crowded into a few years so that she could be turned out as a finished society product at a definite age with all the modern accomplishments, and this necessitated a system of hot-house education at a time when the girl was undergoing her greatest physical development. It was manifestly impossible to change such a system at once; but few parents would be socially so ambitious as deliberately to sacrifice their daughter's welfare if the risks were carefully pointed out and the means for minimizing the damage furnished.

At present the question was how to deal with the patients who came to them for care. Each patient had to be studied in order to determine the class to which she belonged. If the patient was considered absolutely or relatively unfit, extreme care must be used throughout pregnancy to guard against possible complications. The hygiene of her life must be absolutely regulated and she must be treated as though pregnancy and labor were pathological conditions. Many of these cases when the time for delivery approached could be recognized as unfit to go through the strain of ordinary labor, even though early operation be practised to diminish the risk, the question of pain and exhaustion being serious matters for the individual. Many of these patients would stand operation well, though a long continued strain would predispose to physical or nervous collapse. There remained in these cases the choice of operation, whether the patient should be delivered by Cesarean section with no indications except her general condition, or by dilatation of the cervix and extraction by forceps or version.

In the cases on the borderline and in those in whom it was calculated that no definite harm would result from labor much might be done toward lessening the pain and exhaustion by the early use of anesthetics, ether or chloroform, or at such time in the first stage as the patient seemed in need of relief, morphine and scopolamine being employed in carefully graded doses. The advantages of surgery should be employed in these cases and the patient delivered instrumentally at the earliest moment possible without the risk of undue damage. This time will come earlier in the practice of an expert than in that of the general practitioner, and could only be determined by the estimate of the individual case, as to when the risk in operation is less than the danger of permanent damage by prolongation of labor.

Another important part of the care of the obstetrical case is

the supervision of the convalescence and the repair of the damage caused by labor. The custom of allowing patients to get up at the end of ten or twelve days was pernicious. Three weeks' rest in bed after confinement was none too long to insure a good result. After the tenth day much might be done to keep up the strength and improve the general condition by properly regulated exercises. Malpositions and lacerations should be properly attended to before the patient gets up, and if there is any tendency to subinvolution the patient should be kept quiet until satisfactory involution has taken place. In moderate cervical lacerations it is wiser to delay operation until it is ascertained whether they are giving symptoms or not. If the previous history contains no clue to the individual case and if the general nervous and physical conditions are fairly satisfactory, the patient should be allowed to go into labor, an attitude of careful watchfulness maintained, and labor terminated by operative means at the first indication of failure. This meant that the physician and not the nurse should have personal charge of the patient from the beginning of her labor. In multiparæ the history of previous labors should be carefully considered. In primiparæ the age of the patient was an important factor in determining the course of treatment. If the life of the child seemed of paramount importance it was legitimate to advise such operation as would insure the life of the child, even though there might be no indications present for the operation. It was clearly recognized to-day that the elective Cesarean section, performed before labor begins, carries with it nothing more than the ordinary mortality and morbidity of accident when performed by a competent surgeon, and may unhesitatingly be recommended to patients who are in the class where the life of the child is of extreme importance. The indications for this operation should be widely extended as it is distinctly an operation to be performed on those who are considered unfit for the strain of labor and in whom it is feared that pelvic injury at the time of delivery may produce invalidism. There is no reason why we should allow the traditions of obstetrics, which originated when surgery was in a questionable position, to continue to govern our choice of treatment at a time when abdominal surgery on uninfected cases can be considered almost without risk.

DR. EDWIN B. CRAGIN said that all who practised obstetrics in New York had to deal at times with the problem presented by Dr. Newell—the safe delivery of a woman whose nervous condition apparently unfitted her for maternity. He hoped that one coming from the Hub, the center of intelligence, was going to tell them how to bring up girls to make them suitable for maternity. Massachusetts was a State with four large colleges for girls; therefore, he thought that one coming from that State was well fitted to tell them how to solve the problem. The most important part of the paper he believed referred to pro-

phylaxis; the facts were that in cases with this sensitive, high tension nervous system, the woman often simply "pressed the button" and then expected the obstetrician to do the rest. The problem was how to overcome this faulty development.

To take this question up in a practical manner, they must consider first the girl from thirteen to eighteen years of age. It must be admitted that she was often overworked in the schools during her developmental period, *i.e.*, during the first years of her menstrual life. One could see any day such a girl walking up Fifth Avenue, carrying home a large bundle of books to study late in the evening, when she needed time for rest and development. This certainly did not tend to make her fit for maternity. The next question which arose was, what were they going to do with the girl when she reached the age of eighteen? Were they to say that she should not go to college? What was the alternative? This was a question Dr. Cragin was much interested in. He had compared the life of the girl in the city after leaving the preparatory school with the life of the girl in college and especially in one of the colleges in the State Dr. Newell came from, and he said the comparison resulted in favor of the college life.

The alternative was bridge whist, afternoon teas, late hours, etc. If one asked the educators of girls to-day what the chances were for a girl with a college education, as compared with one without it, they would tell at once that the better chances rested with the girl with a college education. They had an immense advantage. If a young girl wished to teach school, she must have a college diploma. Even if a library position was asked for, the girl with a college diploma was given the preference. Therefore, if a girl could obtain a college education without injury to herself, let her have it. Personally he said he had overcome his objection to a college life for girls, and for the reason that the alternative, especially here in New York, was no better.

Dr. Cragin viewed the matter from another standpoint, which was the training of the man who was to do the obstetric work under the conditions mentioned by the reader of the paper.

Years ago obstetrics and gynecology, perhaps also diseases of children, were practised and taught by the same man; later, as gynecology developed, it became separated from obstetrics, as the older men doing the obstetric work had usually gone into it from general medical practice without surgical training, and the younger men with surgical training were attracted to gynecology. Now with the increased demand for surgical skill in obstetrics the two subjects were coming together again. In watching the men on the staff at the Sloane Maternity he had noticed that in general the man who had come from a surgical service made a better obstetrician than one from a medical service. In looking forward, the obstetrician of the future must be the obstetric surgeon—one who has had gynecological

trainings and is able to deal with any complication affecting the pelvic organs.

When one came to the problem Dr. Newell had presented so concretely as to what they should do with those cases who were only able to "press the button" and who were tired out in the first stage of labor, Dr. Cragin said he did not believe that in New York they would be willing to consider such a woman unfit for labor without a trial. Personally he did not think that one could tell before hand whether a young woman with so-called overdeveloped nervous system was unequal to the strain of labor or not. A great many woman, very frail-looking, would go through labor without the slightest trouble. The muscles of her pelvic floor would relax and she would be able to deliver herself without difficulty. Whereas, on the other hand, a robust woman, one who rode horse-back, one who exercised a great deal, with a pelvic floor very rigid, would often have a much more difficult labor. Prior to the first labor Dr. Cragin could not tell how such a woman was going to pass through it. He agreed, however, that in a certain number of cases, where previous labors had shown that the woman was unable to deliver herself, Cesarean section was justifiable. In some cases, if the baby's life was to be saved, Cesarean section was the only alternative.

The whole question resolved itself into a careful observation of both the mother and baby; the preparation of the obstetrician to enable him to deal with surgical complications as they arose, and the realization that the work of the obstetrician requires skill in the use of other instruments than the obstetric forceps.

EUGENE COLEMAN SAVIDGE.—There must first be pregnancy in the nervously over-developed before it can be managed. If women are overcivilized enough, there will be none to manage. On the other hand, if they are properly educated maternity will begin and end easily and naturally.

So that improper education causes the troubles we are discussing, and proper education avoids them. Therefore, from the big subject of the nervous overdevelopment of women, I select the single thread of education.

I am among those who believe that woman is entitled to her maximum development, mentally, morally, physically; that is to say, to her maximum nervous development. But what is this maximum, and what are the results of nervous overdevelopment?

A woman may be educated out of proportion to her possible destiny, out of sympathy with her environment, and still be within the scope of her mental and physical capacity. Happiness being the basis of health, this is only a medical question when it results in unhappiness. An American girl, likewise, may be so Europeanized in her education that she is thrown out of sympathy and interest with American men of the same social possibility. But this again is sociology, and only becomes medical when it brings unhappiness to the individual.

Aside from these social phases, a woman may be said to be overcivilized when her nervous system disqualifies her for utility as sweetheart, wife, mother. This is the view-point of man—the Church—the State. Individualism is the particular enemy of the State, which legislates against it at every turn.

But the right to develop her individuality may seem more sacred to the woman herself than her communal function of breathing the breath of life into the masculine clay—with its attending maternity. When is a woman overcivilized from a woman's point of view?

The overtrained, broken-down athlete is muscularly overcivilized. The brilliant intellect of a Guy de Maupassant, pushed by every form of proper and improper stimulation beyond the limits of finite capacity, is an extreme form of another overcivilization. Women will concede that their sisters are overcivilized when they present an analogy with either of the above extremes. A training, an environment, a habit of life, that results in even a partial disqualification for the average obligation, the average return to the race for the blessing of existence, is an overcivilization. What results follow overeducation in women?

The governor on a motor retards an accelerating speed and keeps the machine from racing itself to pieces. As in mechanics, so in biology nature has a very definite average for each species and has implanted a strong instinct to hold these limits. Were giants and giants, pigmies and pigmies—physical or intellectual—to weld, were an omnipotent Burbank of the human garden permitted to breed and rebreed selections from the largest and best of humanity, average limits would be broken, and we should have a race of demi-gods. Human instinct—a biological governor—defeats this. The very zests of humanity—witness that of the giant for the little woman, and *vice versa*—are equalizing forces.

It is the same in the realm of the mind. Where in all history is the posterity of genius? There is no law of psychical entail. Let one but "o'erinform the tenament of clay," and nature prepares to stop the process with the offending generation—and wisely so. Hence the oversubtle among the women are rarely mothers, and when so are almost always delivered with instruments. Thus nature shows her intolerance of attempts to trespass average limits.

Now, woman is peculiarly susceptible to educational influences. Her inviting plasticity cries aloud for the master hand in the moulding. It is this wonderful alchemy of femininity—transforming a coarse and knotted paternal element as from baser to finer grade—that preserves for the race the higher psychical qualities. Our fathers reason and deduce; our mothers aspire and arrive intuitively. The very best women are capable of receiving, therefore, enhances every feminine value, and really extends their

life-limit. But, again, the question comes, what is the best? And what of the overtrained?

Civilization has no brighter triumph than the American women of highly evolved nervous organization; the poised, yet alertly flexible creature, with accurate intuition, natural insight, and a trained keenness of edge as fine as the soprano she distils from the paternal growl. But the virtue of her great susceptibility has its vice in her peculiar readiness to run into a nervous overdevelopment. But one further turn of the key, but one slight overstretch of the bow—and we may have the mystic, with introverted mind, an occult seeker of visions, given to illuminations and elixir of moonbeams—with the well-known attending troubles. Woman is naturally the orient to man's occident; but this overorientalization certainly disqualifies her for the average obligation and the average return.

The unfair division of vital force, the overdevelopment of the physical element, leaves the physical—especially the glandular elements—undeveloped or demagnetized; and we may have an almost sexless mentality instead of a woman. Nature stops this process of overbreeding by withholding posterity.

The basis of life must always remain the primitive and elemental gland call for cell union. A demagnetized gland, regardless of bulk, lacks the primitive power. We see men enduring, aspiring—inflicting death and even losing life—for the elemental and primal; but never solely for the brilliant intellectual.

And this is our test. Civilize the civilizable, mould the eager mind, give such a nervous development that woman may "forge the anchors as well as wave the gossamers of the mind." But let her not demagnetize her elemental gland capacity by an unfair division of vital forces.

Just as the discovery of the radio-activity of the supposedly ultimate elements has led to a still further division of matter and has revolutionized modern physics—just as the concept of the *vital integrity of the cell* is surely pointing to the cancer cause—so this problem of the conservation and equal distribution of vital force is looming into the medical problem.

But even if woman were to choose the individuality instead of the posterity, and were to welcome the sterility there would still be a grave penalty. Infantile uterus has long been recognized as the result of overexpenditure of vital force in intellectual or emotional outlay. Bulk has little to do with the comprehensive malady of infantile uterus and demagnetized gland; and it has wider moment than question of race and posterity.

"Less than five years will sometimes change an infantile uterus in an unmarried girl with amenorrhea, into a condition of turgid pelvic congestion with profuse menstruation. The pathology is obscure, but there is an analogy between this condition and the gastric engorgement and hemorrhages attending certain stages of cirrhosis of the liver." These patients frequently reach the operating table as a consequence, and there as a final penalty

give up their essential essence of femininity, with a result to longevity that I have elsewhere elaborated.

But suppose our oversubtle women are only partially so, and become mothers. We handle them judiciously; we deliver them adroitly with instruments. On the other hand, suppose nature is trying to shut up the oversubtlety within the offending generation by inflicting uterine and mammary atrophy. Our routine gynecology sometimes thwarts her, and helps pass along oversubtlety along to another generation. We have resourceful methods with the local organs.

But now comes my hobby. All this being within our capacity, we yet transcend ourselves when we train women to become mothers naturally—when we keep the local organs from need of local attack.

Foreseeing, forethinking, and foreplanning do this.

DR. EGBERT H. GRANDIN considered the topic under two heads: The sociological aspect was of vital importance to the integrity of the race, and it was the duty of the physician, in so far as in him lay, to teach his patients the importance of beginning the training for marriage from childhood up. In short, prophylaxis was the self-evident remedy against the rearing of the type of woman so graphically portrayed by Dr. Newell. Poor hygienic surroundings during childhood, education of the brain at the expense of the body, lives of leisure without physical exercise, of necessity these factors resulted in undeveloped nerve centers and in infantile genital systems. The end-result was that such women were not suitable for entering into matrimony. Should they do so we as physicians were up against the questions propounded by Dr. Newell in the event of conception ensuing, and the resulting child meant simply a second edition of the neurotic mother.

The second phase of the paper—the practical phase—dealt with the management of labor. He had very decided views, the result of his experience, and he could not altogether endorse certain of Dr. Newell's statement. Thus, reference had been made to scopolamin-morphine anesthesia. He would object to this because the use of morphine during labor interfered with the eliminatory organs and it was above all essential that these should act physiologically, especially since just after labor extra strain was of necessity thrown upon them. Again, the chemistry of scopolamin was rather obscure, and the reports from European clinics proved that it was not free from danger both from the side of the woman and of the fetus. Further still, he was satisfied that certain well-established measures answered better in case of these neurotic, undeveloped women. Fortunately, this type of woman was rarely met with among the poorer classes where the remuneration of the physician—at best very inadequate—did not permit of the careful supervision which women in the well-to-do class could command. The physician should be the master in the lying-in room. Anxious relatives should be excluded.

Moral suasion could thus be brought to bear and nervous tone be maintained at a higher average. When the uterine contractions became efficient during the first stage, a large dose, twenty grains by mouth or forty by rectum, of quinine intensified the action of the involuntary muscles. One one-hundredth of hyoscine, under the skin, often controlled nervous excitement. Chloral, in fifteen-grain doses, repeated half hourly, for three to four doses, equalized the force of the contractions, the intervals between becoming longer and the duration of the contractions as well. The first stage completed, in the absence of contraindication from the side of the liver, chloroform administered during the muscular expulsive contractions, took the edge off the suffering. On appearance of maternal or fetal exhaustion, version or forceps according to indication entered into consideration. Thus he had guided scores of neurotic women through labor, and this too without ever feeling that in the absence of relative or absolute indication the Casarean section was allowable. Indeed, in reference to this latter point, he could not speak too strongly. The field for this latter operation he was opposed to widening unnecessarily, lest as a result the mortality rate, now at such low ebb, should be materially raised.

DR. GEORGE L. BRODHEAD had found it very difficult to estimate just how much a nervously overdeveloped woman would do in labor, and he spoke of a case which had come recently under his observation. In her first labor some years ago she had delivered herself after a long labor spontaneously, with extensive laceration of the cervix and perineum which were not sutured, but the patient recovered slowly and was told by the attending physician that the soft parts were in as good a condition as before her labor. At the time of her second labor she was safely delivered, by a moderately difficult median forceps operation, of a nine pound child. In her last labor the woman became exhausted, with the head just dipping in the pelvic brim. Forceps were tried ineffectually and version was resorted to; the extraction was very difficult, but finally a deeply asphyxiated ten pound child was born, with a fractured humerus and Erb's paralysis. In this particular case, induction of labor at the eighth month would probably be a wise procedure. Dr. Brodhead did not believe that one could tell without a previous history how much assistance would be required for some patients, for it was impossible to tell how much pain the woman could suffer, or how far labor would proceed before intervention became necessary.

DR. NEWELL had spoken of prophylaxis, and Dr. Brodhead believed he was perfectly correct in advocating rest and relaxation. The tendency among women, especially in the cities, was to spend too much time at bridge whist, suppers, social functions, with too little fresh air and relaxation.

One should advise these nervous patients to spend a large amount of time in the open air and to take moderate exercise.

He was not sure that too much exercise was beneficial, for some of the most difficult labors he had attended were in young women, who had been very athletic.

He did not remember that Dr. Newell had mentioned the subject of diet. Many women were allowed to go to full term without instruction as to diet, being allowed to eat any amount of sweets and starches, and in some instances the children were very large. Personally he had observed that by limiting the diet mainly to proteids after the sixth month, the child would be of moderate development. Some years ago Dr. Brodhead said he had read a paper in which he stated that in his practice he used forceps in fully 50 per cent. of the primiparæ. Dr. Cragin had taken part in the discussion and had stated that many women simply thought that all they had to do was to go to full term, and "press the button" and the obstetrician would do the rest. There seemed to be an inability or an unwillingness, or both, on the part of many patients to stand the requisite amount of pain for spontaneous delivery. He believed that in cases of delayed labor the use of the Champetier de Ribes bags was of the greatest value.

With regard to the use of drugs, he had tried scopolamine and morphine in a dozen cases; he could not see that any better results followed than were obtained by the use of morphine alone or with chloral and bromides.

Cesarean section he had never done in the type of cases mentioned in Dr. Newell's paper, but in selected cases he could see no reason why the operation should not be performed.

DR. FRANKLIN S. NEWELL of Boston said, in answer to Dr. Cragin's question as to what must be done to lessen the educational strain to which the girls at the present time are subjected, that in his opinion the educational period must be extended so that they will be subjected to less strain at the time of puberty and in the years immediately following.

In the education of boys, as the requirements have been increased, the age of graduation from college has grown steadily greater until at the present time the average age of graduation is twenty-three instead of twenty-one as a few years ago.

With girls, on the other hand, although the requirements have been markedly increased within the last few years, the age at which a girl must enter society remains practically the same, that is, from eighteen to nineteen. In order to lessen the strain on the individual girls either the requirements of education must be lessened or the length of time given to education increased.

In regard to the question as to whether a college education did more harm than society life for the average girl, he believed that it was certainly no greater strain if careful supervision was maintained, but the average girl is more ambitious than her brother and much more likely to overwork and injure herself

in college than he, and, therefore, must be guarded against overwork and too late hours.

In regard to the statement of Dr. Cragin's that he was unable to determine in advance what primiparæ needed intervention before the beginning of labor and felt that the test of labor must be applied in practically all cases before the patient could be properly classified, he said that the one definite exception to his opinion to Dr. Cragin's statement was, the older primipara who gives a bad nervous history, whose early life showed that she was unfit to bear burdens imposed on her during her ordinary life, whether as the result of the strain of society or from being primarily unfit.

These cases he believed are not proper subjects to be subjected to any unnecessary strain and advised interference before labor began.

It is a difficult question to decide in border-line cases how far we are justified in giving a woman a chance. Experience has shown that many patients will react badly to labor but will stand the strain of operation well. The choice between abdominal and pelvic delivery must be carefully considered, according to the conditions present in each individual case. Cesarean section done by a competent surgeon, prior to labor is attended practically with no risk to life and the after-results as regards health are good. If a pelvic delivery is performed, in many women there will be damage to the pelvic organs, such as laceration of the cervix or rupture of the perineum, and from the pelvic injury nervous symptoms may develop which may render such a patient an invalid. In his opinion Cesarean section offered less chance of serious complications afterward.

In regard to the question of limiting the patient's diet so as to reduce to a minimum the size of the child at birth, he believed it was not so much the question of what the woman ate as it was of how much she ate. If such women could be made to eat simply enough food to keep themselves in good physical condition instead of seeing how much they could eat during pregnancy the supply of nourishment going to the fetus would be lessened and the baby itself smaller.

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## REVIEWS.

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### MEDICAL JURISPRUDENCE, FORENSIC MEDICINE AND TOXICOLOGY.

By R. A. WITTHAUS, Professor of Chemistry, Medical Jurisprudence and Toxicology in Cornell University, and TRACY C. BECKER, A. B., L. L. B., Professor of Criminal Law and Medical Jurisprudence in the University of Buffalo. Second Edition. Volume III. New York, William Wood and Company, 1909.

The third volume of this series maintains the high standard of the previous two. The book opens with a section of 123 pages

upon "Vision and Audition and Injuries to the Eye and Ear," by J. H. Woodward. As we would expect, the author devotes the larger part of the text to traumatic lesions. The chapter on "Sympathetic Irritations and Inflammation" is most exhaustive. The second section is devoted to the medico-legal relations of insurance by Alfred L. Becker. The chapter on "Insanity in its Relations to Medical Jurisprudence," by E. D. Fisher, covers 200 pages and leaves nothing to be desired. This section is succeeded by two sections on "Medical Unsoundness in its Legal Relations," by Tracy C. Becker and Chas. A. Boston, and the "Medico-legal Aspects of Marriage and Divorce," by Alfred L. Becker. The section on the "Medico-legal Relations of the X-rays and Skiagraphs," by Albert G. Geyser is worthy of especial commendation. The two final sections on "The Medico-legal Examination of the Blood and of the Hair," are written by James Ewing. The reputation of this author as an authority on the blood is well known, and this section fulfills every expectation. The numerous pitfalls which must be avoided in the examination of the blood for medico-legal purposes are fully described, and the recent work on the biological determination of the blood species is excellently summarized.

E. M.

A TEXT-BOOK ON PRACTICAL OBSTETRICS. By EGBERT H. GRANDIN, A. B., M. D. With the collaboration of GEORGE W. JARMAN, M. D., and SIMON MARX, M. D. Fourth Edition, Revised and Enlarged, Octavo, 538 pages; 47 plates and 116 text illustrations. F. A. DAVIS CO., Philadelphia, 1909.

This volume is a good *practical* book covering the entire subject in a satisfactory manner. Part IV, which deals with obstetric surgery is unusually complete for a short treatise. Necessarily both the aim and the size of the book preclude any attempt to deal with doubtful questions, or to discuss the pathology of diseases in detail.

The plates, prepared chiefly from photographs, are, on the whole, clear and instructive; the wood cuts in the text are largely obsolete or too schematic.

R. T. F.

TRAVAUX D'OBSTETRIQUE, par le docteur SAMUEL GAGHE, Professeur agrégé à la Faculté de médecine de Buenos-Aires; Directeur de la Maternité de l'Hôpital Rawson. Large octavo, 418 pages, Paris, 1909. Price, 15 francs. G. Steinheil, Paris.

The early death of the author placed the collection and publication of these monographs in the hands of his friends. All the subjects dealt with are of interest to the obstetrician, some of them have never been presented before in such a complete and masterly manner. Fecundity in women of sixty-six countries practically includes the entire globe. Rachitis in North and South America and its influence on obstetrics is the first

serious attempt to collect statistics of the native-born population of these continents. Pregnancy and labor in primiparæ of thirteen to sixteen years (ninety-two cases), and labor in aged primiparæ, thirty-eight to forty-six years, shows a normal course in both groups. Methods of inducing and accelerating labor; Bossi's dilator; Cesarean section; Tumors complicating pregnancy; Rupture of the uterus; Retention of the torn-off head; Eucaïne and stovaine in obstetrics, are some of the subjects discussed. Coitus during pregnancy is a subject greatly neglected by text-books. It is dealt with in great detail in the concluding chapter.

The author's work shows a large experience, careful clinical observation, wide knowledge of the literature, and an attractive method of presentation.

R. T. F.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

Volume xxxiv, for the year 1909. Published by the Society.

William J. Dornan, Printer, Philadelphia, 1909.

This handsome volume of 876 pages is one of the largest ever issued by the Society. It contains, besides the papers and discussions brought before the Society at its thirty-fourth annual meeting, held in New York on April 20th to 22d, 1909, the candidates' theses; in memoriam tributes to Edebohls, Reamy, and Murray, and a full record of the banquet given by the New York and Brooklyn members of the Society in honor of Ephraim McDowell and the centenary of the first Ovariectomy done by him in America in 1809.

MEDICAL GYNECOLOGY. By SAMUEL WYLLIS BANDLER, M. D.

Fellow of the American Association of Obstetricians and Gynecologists; Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital; Associate Attending Gynecologist to the Beth Israel Hospital, New York City. Second Revised Edition. Octavo of 702 pages with 150 original illustrations. Philadelphia and London, W. B. Saunders Company, 1909. Cloth, \$5.00 net; Half Morocco, \$6.50.

The first edition of this book was reviewed in this journal for February, 1909. That a second edition has been found necessary within a year is sufficient indication that the work has found favor.

This volume differs from the first edition in but a few unimportant particulars. The chapters on electricity and hydrotherapy have been enlarged, while a chapter of six pages upon the subject of Head Zones has been added. These additions have been carried out by the author in a satisfactory manner, and we see no reason, therefore, to change our previous favorable opinion of the author's work.

E. M.

**DISEASES OF WOMEN. A Manual for Students and Practitioners.**

By CHARLES GARDNER CHILD, JR., M. D. (Yale). Clinical Professor of Gynecology, New York Polyclinic Medical School and Hospital; Attending Gynecologist to the City Hospital; Junior Attending Surgeon to the Woman's Hospital. Series Edited by Victor Cox Pedersen, A. M., M. D., Genito-urinary Surgeon to the Out-patient Departments of the New York and Hudson Street Hospitals. Duodecimo of 200 pages. Illustrated with 101 engravings. Lea and Febiger, Philadelphia and New York, 1909.

That a book of this size cannot teach gynecology adequately, is a proposition which probably not even the author will deny. For the manifest demand which compends of this character possess, the student must be blamed, not the author or the publisher. Within the limitations prescribed, this book has been well compiled. Only two criticisms arise. On page 24 it is stated that the epithelium of the cervix in its lower half is of the stratified variety. This is not true. The chapter on "Deciduoma Malignum" reveals much obscurity in the author's mind as to the nature of this malady.

E. M.

**A TEXT-BOOK OF OBSTETRICS.** By BARTON COOKE HIRST, M. D.

Professor of Obstetrics in the University of Pennsylvania; Gynecologist to the Harvard, the Orthopedic, and the Philadelphia Hospitals. Sixth edition, revised and enlarged. With 847 illustrations. pp. 992. W. B. Saunders Company, 1909. Philadelphia and London. Cloth, \$5.00, net; Half Morocco, \$6.50.

Ordinarily it is not necessary to give more than a few lines of approbation to a work that has reached the honor of a sixth edition, but in this volume the distinguished author has taken a wide step of which the value is so evident that one wonders why it was not taken before. In the days before asepsis was known the gynecic surgeon and the obstetrician were rather widely divorced; now that asepsis and all that it means are matters of common knowledge and practice they are often and wisely one and the same. As Dr. Hirst remarks in his preface, all the diseases of women must be considered in relation with the chief act in woman's history, child-bearing. The vast majority of them are consequences of that process. All of them are possible complications. Consequently the specialist in this branch of medicine must be an expert in every department of gynecology. In fact he is the only specialist qualified as an expert by command of clinical material, by extent and variety of experience. It is not surprising, therefore, that the bulk of this work is coming into his hands in America as all of it long ago came into the hands of his colleagues in the older medical centers of the world.

In accordance with this conviction the revision for the sixth

edition has been thorough. The section on operations now includes the surgery for the complications and consequences of the child-bearing process in all periods; that is, practically all of the gynecologic operations. The author holds that panhysterectomy for chorioepithelioma is as much an obstetric operation as the application of forceps. He holds it illogical to recommend the operative treatment for retroversion of the uterus following child-birth, salpingo-oophorectomy for ectopic pregnancy or for infections of the puerperium, supra-vaginal hysterectomy for fibromyoma, or the Porro-Cesarean section, plastic operations for injuries to the genital canal, and then not to tell the student what operation to select and how to perform it. In doing this he endeavors also to present a brief account of the diagnosis and treatment of all the pathological phenomena peculiar to women, which he holds to be the proper scope of a work on obstetrics.

All this is done in a volume practically the same in size as the former editions. How efficiently this is done we will leave the reader to decide. For the man who wants much in small space, and wants that clear, sane and practical, we recommend this book. It truly is an expression of the fact that as a science becomes more perfect its expression becomes more compact.

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## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS.

**The Suprasymphyseal or Extraperitoneal Cesarean Operation.**—Cyrille Jeannin (*L'Obstét.*, Aug., 1909) says that the suprasymphyseal Cesarean section is based upon the fact that the classical operation does not guarantee against infection, and that the new method prevents contamination of the general peritoneal cavity with the contents of the ovum. The suture involves the lower segment of the uterus, the less active portion of the organ. The author tabulates 148 cases in which this operation has been performed by various surgeons. He then describes carefully the technic of the operation, beginning with a transverse incision of the wall of the abdomen, and of the parietal peritoneum; suture of the two superior peritoneal folds; transverse incision of the lower uterine segment; spontaneous birth of the child; suture of the uterus with catgut, and of the abdominal wall. This is the original procedure of Frank. It has been modified in several ways. There are now extraperitoneal and transperitoneal methods. In the extraperitoneal method the peritoneum is separated from the fundus of the bladder. This is often very difficult to execute without tearing the bladder or the peritoneum. In the transperitoneal method, passing through the peritoneal sac by certain

devices, it is kept separate from the general cavity; forceps, sutures, etc., being employed for this purpose. Results as to the maternal mortality give 7.33 per cent. of deaths; by infection, 5.33 per cent. For the child the mortality is 7.45 per cent., and from infection 3.4 per cent. The postoperative mortality varies between 3 and 4 per cent. The accidents that may occur locally are both severe and frequent, and are generally of the nature of infection, and wounds of the bladder. The child frequently is born asphyxiated. The peritoneum may be torn while being separated, or in the course of the extraction. Hemorrhage has occurred a few times, as well as tearing of the uterine muscle. The extraperitoneal method is theoretically better, since it more surely prevents contamination of the peritoneal cavity while the results of the transperitoneal operation are as good, and it is easier to perform, quicker, and less liable to accidents. It has been used in eclampsia, in placenta previa, and in contracted pelvis when there is danger of infection.

Otto Kustner (*Munch. med. Woch.*, Aug. 24, 1909) says that the difficulty of the extraperitoneal Cesarean section consists in the difficulty of getting room through which to deliver the child. In his first operations the peritoneum was torn in the extraction. Later he observed that on the left side of the bladder the loosening of the peritoneum may be done easily and quickly. The incision should be made longitudinally through the left rectus, a few centimeters from the linea alba. The bladder should be completely filled with water, and then the peritoneum separated from the bladder, the cervix, the lateral fornices. The left-sided incision is made because the uterus is turned to the right, and thus the peritoneum is carried higher up and further out of the pelvis. The position of the bladder varies in different women, being central, or to either side. The filling of the bladder shows its position, which is an important point. The author found the delivery of the head difficult, it being not easy to get hold of it and necessary in some cases to use much force to push it into the opening. The ordinary forceps are useless on account of the difficulty of grasping the head with them. The author has had constructed a small pair of forceps, with the short handle bent to one side, and with Smellie blades. With this instrument it is easy to grasp the head and commence the extraction. The open peritoneal method may be used wherever the classic section is possible, in which the membranes have not ruptured. The incision should be made in the interval between the contractions. It is possible to allow the third stage of labor to be completed naturally, by the Credé method, and to control inertia by massage. It is possible in most cases to make the section entirely extraperitoneally. It is a little more difficult and slower than the transperitoneal method. After the child and the placenta are delivered, the cervical wound closes easily and becomes very small. Infection is much less likely to occur than when an incision is made in the upper part

of the abdomen. The author does not think the operation practical for infected cases. If a woman has streptococci in her vagina any wound is dangerous for her. An absolute diagnosis of the noninfection of the genitalia is most important. This is essential when the woman has been examined with the bare hand outside of the clinic, and when the membranes are ruptured.

**Technic of the Conservative Cesarean Section.**—J. A. Doleris (*La Gyn.*, September, 1909) believes that we should carry out in the matter of obstetric maneuvers and operations the same rules of absolute asepsis that are customary in gynecological operations. In every labor case all the genitalia even up into the cervix should be carefully disinfected by means of pure tincture of iodine. In many cases of labor in which the patient comes from an unsanitary tenement house the malodorous and profuse discharge from the vagina leaves no doubt of the genital infection. These same cases have been exposed to the infections that are rife in such places. The conservative Cesarean section should be made at a time selected previous to the calculated term of the pregnancy, and should be undertaken as carefully as any other operation, with every ordinary precaution. An operation conducted in this manner when the cervix has begun to be effaced should give the best of results if carried out with perfect asepsis, much better results than when carried out late, after attempts have been made to deliver through a too narrow pelvis. The mortality is less in primary section than in one made during labor. During the past year the author has performed eleven Cesarean sections out of seventy-seven cases of contracted pelvis, with eleven living children and one maternal death. This death occurred in a case operated on fifty-five hours after the beginning of labor, after many examinations, with the cervix dilated to the size of a fifty-cent piece, and the amniotic fluid draining away through a fissure of the membranes. She died of sepsis and adynamia. The author uses surgical preparation of the patient, and of the operative zone; a short incision without exteriorization of the uterus; manual compression of the pedicles; injections of ergot for hemorrhage; suture of the uterus with chromicized gut; utero-vaginal drainage with gauze, and abdomino-peritoneal drainage.

**Psychoses Beginning in the Puerperium.**—Charles Ricksher (*Bost. Med. and Surg. Jour.*, July 29, 1909) states that there is no psychosis which can be strictly called a puerperal psychosis, but there is no doubt that the puerperal states can act as an exciting cause of a psychosis in certain women under certain conditions, which conditions are at present unknown. The mortality of children born of mothers who become insane during pregnancy is very great. The puerperal states may be exciting causes of attacks of maniac-depressive insanity in women who have never before been insane, and in women who have had previous attacks of this disease child-bearing is apt to be the exciting cause of another attack. In women suffering from dementia

precox the puerperal states cause an exacerbation of the acute symptoms and cause the psychosis to become more active. Homicide is comparatively rare among women becoming insane during this period and is more liable to occur in patients suffering from dementia precox than any other psychosis, while attempts at suicide are less numerous in these cases, but are more liable to occur in patients suffering from the depressed form of manic-depressive insanity. Eclampsia and the toxic infections are not more frequent in women who become insane than in women who are normal mentally, and these factors are of little moment in any but the toxic deliria. Illegitimate children are not given as the cause of insanity as frequently in this country as in Europe. The reason for this is not determined. Comparatively few women who later become insane show abnormalities in pregnancy and one cannot tell from the character of the pregnancy whether a woman will become insane after labor or during lactation.

**Primary Ovarian Pregnancy Combined with Intrauterine Pregnancy.**—This rare case is recorded by C. C. Norris (*Surg. Gyn. Obst.*, Aug., 1909). The right ovary and tube were normal. A large corpus luteum was present in the latter. The left ovary had been converted into a gestation sac the size of an orange. This was ruptured on its inferior and outer aspect. A fetus, somewhat macerated, of about five months' development was present. This was partially within the gestation sac. The uterus was opened and an intrauterine fetus was delivered without rupture of its membranes. The interesting points of this history are that the rupture of the ovarian gestation sac produced no severe symptoms and that the irritation from the presence of the fetus in the peritoneal cavity was not sufficient to prevent or interfere with the subsequent intrauterine pregnancy. Both tubes were macroscopically normal. The gestation sac occupied the position of the ovary. It was connected to the uterus by the ovarian ligament and the sac itself contained definite ovarian tissue which was demonstrated in various sections, which were taken from the sac wall at some distance from one another. The case could not be a tubal or a tubo-ovarian pregnancy as sections taken at intervals of .5 cm. from one another throughout the entire length of the tube, including the fimbria at the abdominal ostium, failed to show any evidence of extrauterine pregnancy, the tube being entirely normal except for a few light adhesions over its middle third, which were probably produced at the time of rupture of the ovarian gestation sac. The inner third contained a decidua, the result of the intrauterine pregnancy. The case could not have been one of abdominal or broad ligament pregnancy, as the entire placenta and a part of the fetus was found enclosed in the ovarian gestation sac. In a fairly extensive search through the literature of ovarian pregnancies covering the last ten years, with especial care, the author has found nineteen positive cases. Of these, ten have shown a distinct corpus between formation, while in five it was

doubtful but probably present. This bears out the theory that the spermatozoon enters a recently ruptured Graafian follicle and there fertilizes the ovum.

**Internal Transmigration of the Fecundated Ovule.**—Ed. Schwartz and Boyer (*Presse Méd.*, Sept. 10, 1909) report a case in which the alternating action of the ovaries in ovulation seems to be proven. The patient had undergone the removal of a tubal pregnancy of the left side six months before the occurrence mentioned. The normal left ovary had been left in place, while the right ovary which contained several cysts had been removed. A new pregnancy took place, the normal left ovary having produced an ovule which passed over to the right tube.

**The Determining Cause of Sex.**—Louis Billon (*Gaz. de Gyn.*, August 1, 15, and Sept. 1, 1909) discusses the various theories as to the cause of sex. He notes the theory of Schenk, that this is affected by the amount and character of the food eaten by the pregnant woman, and the general health in which she finds herself. When robust and having been well nourished a male child is born, but when poorly nourished the product is a female child. Undoubtedly this matter of sex is presided over by some law, which we have not yet found out. Thury, from experiments on animals, has brought forward the theory that when conception occurs before the menses a female is produced, but after a period a male came into being. Boissard defends this theory; in prolonged pregnancies, over nine months in length, fecundation is premenstrual and a female results; in twin pregnancies which are bi-vitelline with crossed sex, the weight of the boy is greater than that of the girl, she being conceived later. In amenorrhea of nursing women the fecundation is feminine; in the newly-married woman who becomes pregnant before a menstrual period the child is usually a female. The same author finds that the birth of male children increases when from any cause there is a destruction of many males, as in case of a war that decimates the men of a nation. When the mother of a child is more vigorous than the father, the sex of the child is the opposite—namely, masculine. When the mother is enfeebled we get the opposite of the stronger father, and a girl is born. The author calls this the law of the sex of the more feeble generator. This includes the theories of Schenck and of Guiard, which it excels and explains. Clinical facts to confirm this law are not so easy to find. In enfeebled nations many boys are always born. Among the Maoris of New-Zealand boys predominate among births. After the wars of the Empire boys predominated. Among mothers of illegitimate children boys predominate among the offspring. When the father is younger than the mother more boys are born. Consequences of these facts are that the child will resemble most his strongest parent. This resemblance will be less as the number of pregnancies increases.

## GYNECOLOGY AND ABDOMINAL SURGERY.

**Leukocytes and the Differential Count in Acute Abdominal Infection.**—J. J. Coons and H. O. Bratton (*N. Y. Med. Jour.*, July 31, 1909) place the following interpretations upon the leukocyte and differential counts in acute abdominal infections: Polynuclears, below 75 per cent.: if there is a leukocytosis, one may look for an old infection, well walled off, may be an acute exacerbation; usually, there is a mild secondary anemia. Polynuclears, from 75 to 80 per cent.: indefinite; the history of the case and the patient should be considered. In our series of 184, 32 had polynuclears from 75 to 80 per cent.; 15 were abscesses; 11 acute suppurative appendicitis. Polynuclears, from 80 to 85 per cent.: the patient is in no immediate danger unless the total leukocyte count is low, suggesting a poor resistance. If the leukocytes are increasing, an immediate operation should be advised if the relation of the polynuclears to the total leukocyte count indicates a good resistance. If the leukocytes remain stationary or decline, the surgeon should rely on the physical signs in making up his mind when to operate. Polynuclears, from 85 to 90 per cent.: look for a severe infection. If there is a proper leukocytosis, according to the chart, an immediate operation is indicated. Polynuclears, above 90 per cent.: virulent infection, grave prognosis. Twenty-five of the writers' 31 cases above 90 per cent. had some form of peritonitis. Where there is no increase in the leukocytes, and the polynuclears high, little hope can be entertained for the patient from an operation.

**Surgical Treatment of Varicocele of the Broad Ligament.**—S. E. Tracy (*N. Y. Med. Jour.*, July 31, 1909) protests against the removal of the appendages in cases of simple varicocele of the broad ligament. With this condition the patient complains of weight and discomfort or of dull pain in one or both sides of the pelvis, is usually indisposed, tires easily, and suffers from backache. There is usually leucorrhea and there may be dysmenorrhea. As a rule, the bowels are constipated. Ligation of the veins in the broad ligament is all that is necessary. Oophorectomy is as unnecessary as castration of the male for varicocele or amputation for varicose veins of the leg.

**Fibromyomata Uteri.**—Ellice McDonald (*Jour. Obst. Gyn. Brit. Emp.*, Aug., 1909) analyzes a series of 700 cases of uterine fibromyomata with special reference to degenerative changes. He says that the menopause does not bring a cure to fibroids; on the contrary, increasing age increases the danger from these growths. There is little danger of malignancy arising in fibroids before forty years of age, after which time the danger increases with each year. In view of the sarcomatous changes, carcinomatous associations, and other degenerations of uterine fibromyomata, early removal is indicated when they are of sufficient size to produce symptoms and cause the patients to seek advice. Small uncomplicated fibroids in young women do not require early treatment. Thorough pathological examination should be

made of all fibroids for evidence of malignancy. The tumor should be opened at the time of operation and examined for adenocarcinoma or sarcoma. Particular study should be devoted to those tumors which are necrotic, cystic or both, as among these are found the largest proportion of malignant changes. In view of the large percentage of inflammatory changes in the Fallopian tubes and appendix, these should be examined at the time of operation, and removed if diseased.

**Value of Fowler and Clark Positions.**—H. B. Delatour (*N. Y. State Jour. Med.*, Sept., 1909) favors irrigation of the abdominal cavity with normal salt solution after a clean operation, leaving 500 to 1000 c.c. of this solution in the peritoneal cavity and elevating the foot of the bed 20 degrees as advocated by Clark. In clean appendicitis cases with a large quantity of serum in the abdomen it seems only rational that the sooner this can be absorbed the less danger there is of its becoming infected, and it has been demonstrated that the natural flow of the lymphatic current toward the diaphragm can be hastened by the elevated pelvic position. Where this fluid is septic and the patient already suffering from the absorption, the elevation of the pelvis and the consequent rapid absorption of the septic fluids might overcome the patient and cause death. In such cases Fowler's position, elevation of the head of the bed, is indicated.

**Buried Catgut and Subcuticular Stitch in Perineorrhaphy.**—B. M. Anspach (*Penn. Med. Jour.*, Sept., 1909) calls attention to the fact that while silkworm-gut seems an ideal suture material for perineal operations, patients dread the removal of sutures and that the knots not infrequently cause small areas of necrosis. Catgut overcomes these disadvantages and its own shortcomings may be overcome by making the sutures subcutaneous. The writer has obtained primary union without stitch infection in 175 cases by inserting and bringing out the perineal sutures just inside of the peripheral limits of the denudation. After they are tied, the ends are cut short and the skin is united over them with a running subcuticular stitch. Gut which has been hardened in formalin and then sterilized by the cumol method is the ideal suture material. The subcuticular suture must be eight- or ten-day gut. For this reason the ordinary cumol preparation will not do. In the after-treatment of such cases the bowels are moved on the third day and at least every other day thereafter. The perineum is cleansed daily with sterile water. There is no need for the careful drying and powdering which external sutures usually require.

# DEPARTMENT OF PEDIATRICS.

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## ORIGINAL COMMUNICATIONS.

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### THRUSH.

SACCHAROMYCES ALBICANS.

BY

HENRY P. DE FOREST, M. S., M. D.,  
New York.

(With thirteen illustrations.)

PRIOR to the discovery of bacteria and the general acceptance by the medical profession of their importance in the causation of disease, three bacterial or parasitic diseases were common in infants.

*Infection of the navel*, the most fatal disease, causing the speedy death of the child from septicemia, was at one time so prevalent that in some maternity hospitals nearly 80 per cent. of children died from this cause alone during the first week of life. The use of sterilized dressings and of a moderately antiseptic powder, composed of equal parts of salicylic acid and oxide of zinc, as a dry dressing for the cord has practically eliminated navel infection from the category of disease.

*Gonorrheal ophthalmia* was at one time very prevalent. In epidemics which developed from time to time in some maternity hospitals, as high as 97 per cent. of the children born became blind before the first month of life was ended. Even to-day, as has been recently stated in a petition presented to the General Assembly of the State of Iowa for the control of gonorrhea and syphilis, "from 10 to 20 per cent. of the blindness in that State results from this disease."

The discovery of Credé, that the instillation of one drop of a 2 per cent. solution of nitrate of silver into the eye of a new-born babe would effectually destroy any gonococci present, was the beginning of a revolution in the treatment of this class of cases, and gonorrheal ophthalmia also is now regarded as entirely preventable.

*Thrush* or *sprue*, the third parasitic disease to which infants are exposed, at one time gave rise to a high mortality. It is caused by a mould fungus floating in the air, becoming lodged upon the mucous membrane of the mouth and there developing. First there appear minute, somewhat raised points which soon enlarge and coalesce, forming snow-white masses of fungus growth, often thought by inexperienced mothers and incompetent nurses to be small curds of milk.

That thrush is preventable when proper treatment is carefully followed out was firmly fixed in the mind of the writer by an experience while on duty as interne in the Sloane Maternity Hospital, in 1892. Nine hundred and ninety-seven infants had been born without a single case of thrush developing during their residence in the hospital. For obvious reasons, the resident obstetrician, Dr. Ervin A. Tucker, was most anxious that the series of a thousand cases should be completed. A substitute nurse, who had finished her course of training at the Sloane and was, therefore, supposed to be thoroughly competent and familiar with the care of the infants, came one night to relieve a nurse suddenly taken ill. In the morning three cases of thrush were found in the children under this nurse's care. Inquiry disclosed the fact that instead of carrying out the routine of treatment hereafter mentioned, the nurse spent most of the night reading a novel. The feelings of the resident obstetrician can better be imagined than described, and the nurse was sent back to her hospital forthwith without even changing her uniform and with orders never to enter the Sloane again.

These three diseases of the new-born have become relative rarities in this city where competent physicians and nurses are available. That they may still occur, however, is shown by the following record:

CASE I. *Thrush of Mouth, Stomach, and Small Intestines. Multiple Ulcers of Small Intestine. Multiple Punctate Intestinal Perforations. Intestinal and Intraabdominal Hemorrhage. Death.* (Fig. 1).—J. L. P., a boy, was born on the twentieth of August, 1909, after one of the most normal and uneventful labors that the writer has ever seen. He weighed at birth eight pounds and four ounces; was well developed in every way, and began life under the most favorable surroundings, so far as the home was concerned. The nurse in charge of the case had been chosen by the patient herself before the physician was engaged, and although she had had no hospital training, she stated that she had

been a nurse for twenty years and had been chiefly occupied in confinement cases. The fact that she had no thermometer and took no notes did not commend her as a competent nurse, but the arrangements had been definitely made and it seemed inadvisable to insist upon a change. Both mother and child were normal and after a few days I left the city. A competent man was left in charge of the patient and definite written instructions were given to the nurse as to the care of the child.

Four weeks later, upon my return, I was called at once to see the patient. The mother was in excellent health, although for some unknown reason practically no milk had been secreted, and extra feeding had been begun. The first nurse had been



FIG. 1.--Thrush of the mouth (Sprue; Ger., Soor, Fasch; Fr. Muguet).  
Cases I, II and III.

dismissed a day or two before as the family finally became convinced of her utter incompetence and her entire failure to carry out directions.

When the child was two weeks old the mother noticed white spots in the baby's mouth, but was told by the nurse that this was curdled milk and that they were unimportant. The care of the mouth and prophylactic measures had been entirely abandoned. The baby had been given a so-called "comfort" to hold in his mouth most of the time, in spite of the fact, so well stated by Tweedy in "Rotunda Practical Midwifery," "Thrush is a disease of the mouth that results from the use of a dirty nipple or bottle or a much-treasured but filthy comforter, the use of which we strongly condemn."

The physician had been notified that he need not call unless he was specifically asked to do so, and as a matter of fact had seen the child but once during the puerperal month.

The mouth of the baby slowly became snow-white; the white patches had coalesced and almost covered the mucous membrane. He had steadily lost in weight and now weighed but seven and one-half pounds. Both arms and legs were much emaciated, and the abdomen was markedly distended and tympanitic. The abdominal veins were enlarged and a miniature caput medusæ radiated over the skin from around the navel. A profuse diarrhea existed; the stools were watery, green in color, and offensive. They contained small, rounded, snow-white masses varying in size from that of the head of a pin to two or

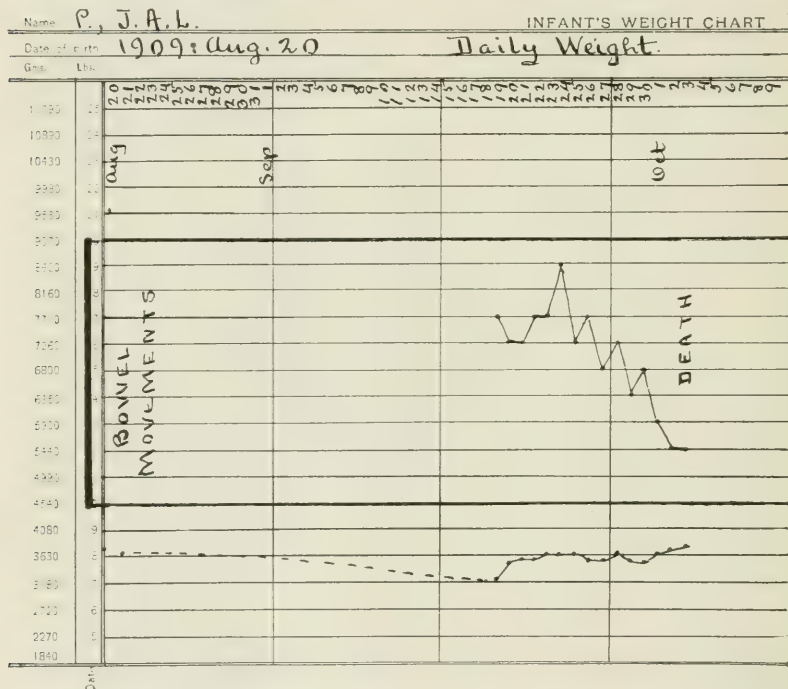


FIG. 2.—CASE I. Weight chart and bowel movements.

three times this diameter. These, the mother had been told, were undigested milk curds. They were really masses of the thrush fungus.

When first seen on my return the temperature was subnormal (96° by rectum), and the child was in a condition of collapse and of apparently impending death. Fortunately, a competent nurse had been secured and by means of a hot bath and stimulants, the child revived.

Systematic cleansing of the mouth with a saturated solution of boric acid was at once begun and ten drops of glycothymoline, well diluted, was given before each feeding and an equal amount of essence of pepsin was given after each feeding. Nursing was

discontinued on the second day thereafter, as no milk existed in the breasts. A weak preparation of modified milk was begun, and for a few days the conditions slowly improved.

As is shown in the accompanying weight chart (Fig. 2), the weight of the child slightly increased; the diarrhea slowly subsided, and at the end of ten days the baby, though still poorly nourished, was but two ounces below its birth weight.

On the second of October, the second nurse was obliged to leave for another engagement and a competent woman was secured in her place. The stools were normal in character and

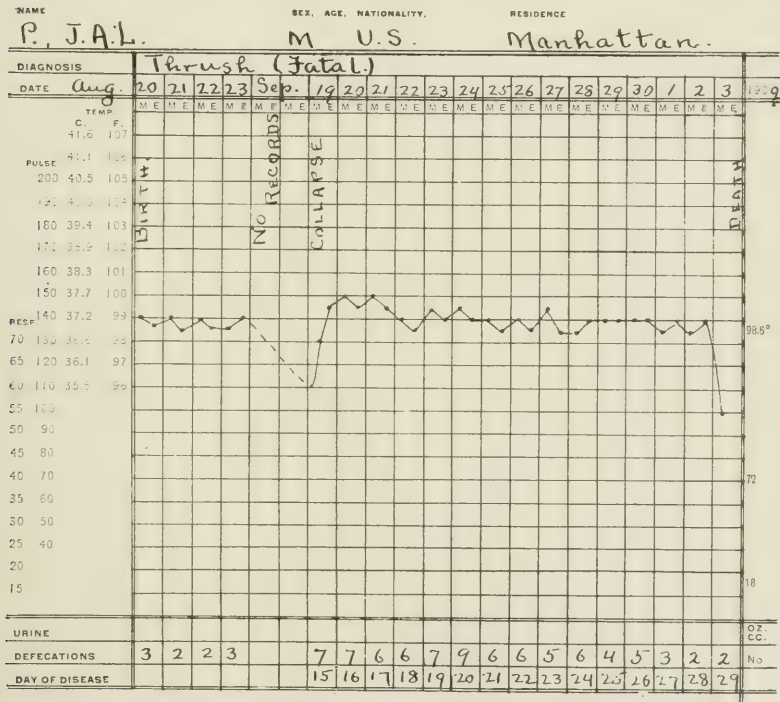


FIG. 3.—CASE I. Temperature chart in fatal case of thrush.

from two to three movements occurred in each twenty-four hours. The constant crying that had gone on for a week or two before my return had stopped. No patches of fungus in the mouth or in the stools had been observed for several days. The modified milk was taken readily and was well digested, and the condition of the child had improved so much that no more anxiety was felt as to the outcome of the case.

On the morning of the third of October I was asked to see the child at once, as the diaper at 10 o'clock showed a considerable amount of blood. At 11 o'clock, when the child was seen, it was almost pulseless and a larger diarrheal movement had

occurred, containing much blood. A hot bath and stimulants were at once given. A high irrigation of the colon with warm saline solution brought no blood away. The opinion was expressed that an ulceration of the small intestine had taken place and that hemorrhage of the bowels had resulted. The child did not revive and died an hour later.

Fortunately it was possible to examine the entire intestinal tract. The stomach was normal and contained the partly digested milk of the last feeding. The colon, too, was quite empty, and neither the stomach nor colon showed any ulcera-

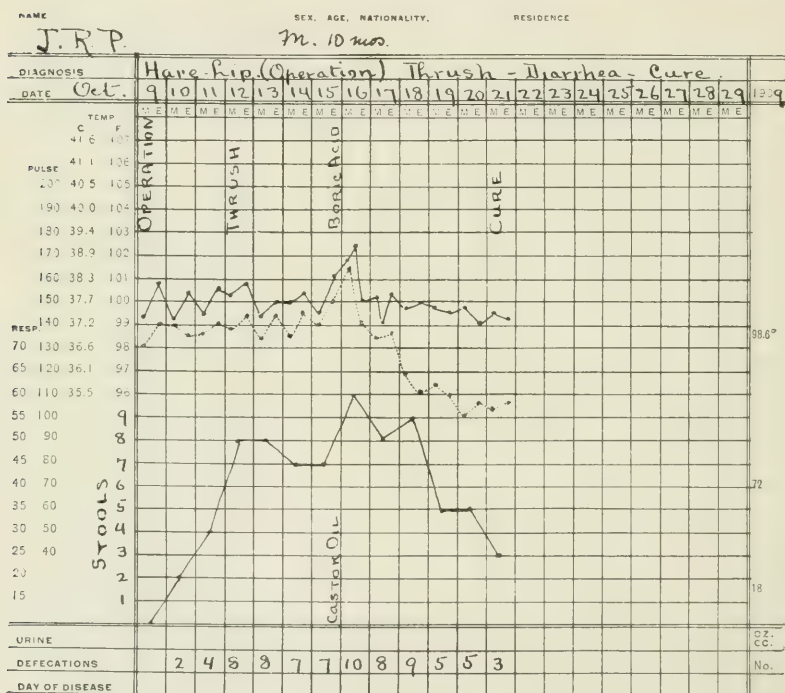


FIG. 4.—CASE II. Temperature chart and bowel movements. Recovery. Thrush

tion. The abdominal cavity was distended with fluid blood as was also the small intestine, and from a half-dozen minute openings fluid blood spurted from the intestinal wall as the coils were lifted from the abdominal cavity.

Further examination of the small intestine showed that at numerous places along its course were small ulcers varying in size from a pinhead to a half-inch in diameter; some of them were still covered with masses of fungous growth, no longer active but partially separated from their underlying base. The necrotic tissue thus formed had slowly sloughed away, and in addition to those ulcers which had actually eaten entirely through the

intestinal walls, there were a number of others that would also have ended in perforations.

Most of the ulcers were located at about the middle of the jejunum and on the wall of the gut opposite the mesenteric attachment. The Peyer's patches in the ileum were not ulcerated, though the upper portion of the ileum was involved in the parasitic growth.

Death was due, therefore, to thrush with ultimate ulceration of the mucous membrane of the small intestines, intestinal perforation, and intestinal and intraabdominal hemorrhage.

It is evident when the history of this unfortunate patient is read that no matter what theoretical information may be possessed concerning the prophylaxis and treatment of even so simple and preventable a disease as thrush, an efficient nurse is essential if the theory is to be put into practice and babies are to be saved from such an untimely death.

A few days after the occurrence of the fatal case just reported, the writer was asked by a medical friend to see a little patient in consultation. Through his courtesy I am enabled to submit with much more satisfaction the report of this case:

CASE II. *Thrush of Mouth. Recovery.*—J. R. P., a male child, ten months of age, living in the country some miles from New York, was born with a hare-lip upon the right side extending to the nasal orifice. The soft palate was not involved. The child was able to nurse fairly well and developed about as well as most children do, weighing eighteen pounds at the age of ten months. The mother brought the little boy to the city for operation to correct the facial deformity.

On the sixth of October, this was cleverly performed and the result was extremely satisfactory.

During the few days immediately following the operation, while the sutures were still in place, it was impossible to carefully cleanse the mouth without the risk of tearing out the lip sutures. The spores of thrush evidently found entrance into the baby's mouth, and three days after the operation diarrhea began which in the course of another three days became profuse; the child lost considerably in weight, and the stools were green in color. I saw the baby on the fifteenth of October, and from the snow-white condition of the tongue and the pharynx, closely resembling that depicted in Fig. 1, a diagnosis of thrush was made. A saturated solution of boric acid was used to cleanse the mouth before and after each feeding. Ten drops of glycothymoline in a teaspoonful of water was administered before feeding and half a teaspoonful of essence of pepsin was given after each feeding. Almost at once the condition improved, and on the twenty-first of the month the baby returned home quite well. (Fig. 4.)

The case reported by Mikulicz is of particular value for com-

parison with the foregoing cases, as the clinical picture, seen in the mouth which is shown in Fig. 1, was practically the same in all three cases.

CASE III. *Thrush of Mouth. Thrush Septicemia. Death.*—K. S., twelve days old, a son of a merchant in Königsberg. Immediately after the birth of the child he was given to the wife of a laborer, who acted as nurse from that time onward. The child did not nurse, but was fed with diluted cows' milk in a bottle with a simple rubber nipple. At the end of a week the child began to cry more and more and showed less and less desire for nourishment. Upon the eighth day, small white spots were observed in the mouth, and these gradually increased during the next few days, although it would appear that the mouth had been rinsed occasionally with a boric solution of one teaspoonful to a glass of water, applied by means of a small linen cloth.

When the child was twelve days old, on the eighteenth of July, it was brought to Mikulicz for treatment. The little patient was pale, very slenderly built, and with badly developed panculus adiposus. He cried a great deal in a weak voice. The feces were thin and of a yellow-green color. The mucous membrane of the pharynx was sprinkled with numerous irregular deposits varying in size from the head of a pin to the size of a kernel of wheat. The color of the larger ones was chalk-white. These masses were somewhat raised above the surface and were surrounded by a uniform diffuse redness of the mucous membrane. They were easily removed by wiping the mouth cavity with a small piece of linen, and occasionally the site from which the mass was removed bled slightly. A microscopic examination proved that these masses were composed exclusively of the fungous growth called *Saccharomyces albicans*. The reaction of the saliva was acid, otherwise there was nothing noticeable. For the succeeding ten days a number of small punctate masses, similar to those described, developed, but by the first of August the mucous membrane showed nothing abnormal. A few weeks later death occurred as the result of multiple abscesses of the connective tissue. In the light of our present knowledge, it is probable that the terminal condition was that of thrush septicemia.

It is to be remembered that thrush may also develop upon other mucous membranes than those of the mouth and intestinal canal: upon the mucous membrane of the vagina in pregnant women where the vaginal secretion is profuse. According to Hausmann, the disease may be transmitted to the child from the vagina of the mother at the time of delivery, and so this form of thrush may be of double importance. Even in virgins where the secretion is more profuse and acid than usual, the growth may take place. This is illustrated by the following case:

CASE IV. *Thrush of Vulva and Vagina* (Fig. 5).—Miss T. L. L., a nurse, twenty-three years of age, had been employed for some time on an exceptionally difficult case and was physically much exhausted. She became slowly conscious of irritation about the vulva and came to the writer for treatment.

Examination showed that the entire vulva was thickly spotted



FIG. 5.—CASE IV. Thrush of the vulva.

with snow-white masses of the thrush fungus that were especially crowded in the region of the clitoris and the labia minora. The hymen was intact and of the annular type. The microscope showed the typical formation of thrush. Such masses as were easily reached were wiped away with a cotton swab soaked in a saturated solution of boric acid; and by means of a small glass catheter, with the patient in a recumbent position, vaginal

douche of saturated boric acid was given, and a number of white rounded masses of fungous growth were washed from the vagina through the small opening in the hymen. Three similar treatments on alternate days were sufficient to effect a cure. There was no recurrence. The condition when first seen is well shown in the illustration.

A few observers have reported cases in which thrush developed upon the breasts and nipples of nursing women, either primarily or by transmission from the infected mouth of the nursing child. But one such case has come under the observation of the writer.

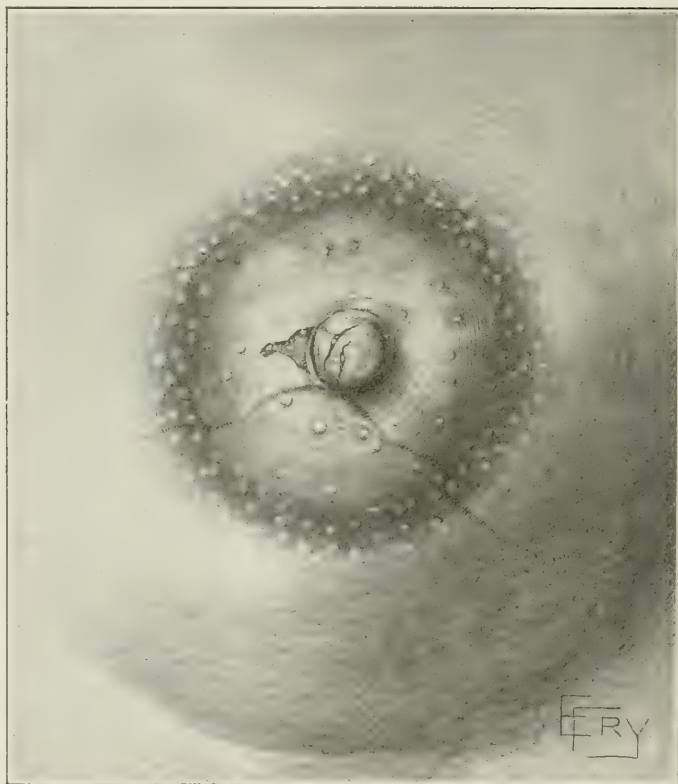


FIG. 6.—CASE V. Thrush of the nipple.

CASE V. *Thrush of the Nipple* (Fig. 6).—Mrs. B. G., aged thirty-seven, a native of Ireland, was delivered of her ninth child by the writer, May 20, 1894, in connection with the work in Out-Patient Obstetrics at that time maintained by the Red Cross Society of Brooklyn. The actual delivery of the woman was

something of a novelty in obstetrics for she refused to go to bed, and as labor pains became more and more severe she maintained a position standing up, leaning forward, and holding with her hands to the bottom of the bedstead. The child was born with the patient still in this position and was caught in the hands of the obstetrician when it was finally dropped from the vulva. After the child was thus born and the cord tied, the woman consented to go to bed. The subsequent course of the puerperium was normal and uneventful.

Four weeks afterward the woman called at my office for the relief of extensive fissures of the nipple and erosion of the breast adjacent to it. She stated that every morning small snow-white spots were found on the raw epithelial surface, sometimes in the fissure, sometimes on the eroded area. Examination of these spots complained of showed small masses of thrush which were easily brushed off. The mucous membrane bled readily and gave her great pain each time the child was put to the breast.

Directions that had been given for the care of the child's mouth and the mother's breasts had been neglected and patches of thrush fungus also existed in the mouth of the nursing.

For the child the directions already outlined were at once begun. For the mother the fissures in the nipple were thoroughly cleaned with boric acid solution, dried, and then painted to the bottom of each fissure with a flat wooden tooth-pick, dipped in 8 percent. nitrate of silver solution. The eroded area was painted with the same solution. Cleanliness, the use of boric acid, both in the form of a solution before nursing and as a dry powder between nursing intervals, effected a cure within a week. Fortunately the breast did not become infected and no abscesses developed.

*Nomenclature.*—It is well to bear in mind in the consideration of this disease that there is a considerable confusion in the nomenclature. There is a tropical disease known as tropical diarrhea, diarrhea alba, apthæ tropicæ, Ceylon sore mouth, psilosis linguæ, and a variety of other names. In the East Indies this disease is also called by the Dutch "spruw," which name has been adopted by the English as "sprue." It is a peculiar and very dangerous form of chronic catarrhal inflammation of the whole or part of the mucous membrane of the alimentary canal. It is peculiar to the tropics, most common in adults and only develops in temperate climates in individuals who have previously resided in the tropics. It would be well if all writers referred to this disease as psilosis to prevent confusion. An excellent description of it is to be found in Manson's "Tropical Diseases," and there are several extensive monographs upon the subject. This, it is evident, is an entirely different pathological condition from that which we are about to describe.

*Etiology.*—While it is doubtless true that actual inoculation with the thrush fungus is necessary before the characteristic growth of the disease takes place, it is also true that a healthy person, whether nursing, child, or adult, is practically immune against thrush infection. This immunity can be lost as a result of various diseases. In the new-born and in nurslings this easily occurs as a result of disturbed digestion, eruption of teeth or slight attacks of gastritis. In older children or adults it follows diseases of greater severity, such as measles, pneumonia, and typhoid. Just what alterations in the mucous membrane or secretions of the mouth are occasioned by these illnesses which permit thrush to develop has not yet been determined. The cause of thrush is therefore dependent in large measure upon the general condition of the patient.

Hausmann believes that transmission of the disease from the vagina of the mother to the child may occur at the time of delivery just as gonorrheal infection is transmitted in a similar way.

The infection is usually due either to inspiration of the spores floating in the air or to the use of unclean nursing bottles, sucking bags, sugar-teats, and the so-called "comforter," which is a continual source of danger to children who are permitted to use it. All of these, particularly when the contents are undergoing fermentation, furnish most excellent nutrient media for bud-fungi.

Neglect to keep the mouth in a proper state of cleanliness materially favors the proliferation of the fungus and it grows best upon the juicy, porous pavement-epithelium of the oral and pharyngeal cavities.

In institutions the disease should be regarded and treated precisely as any other contagious disease. There is no doubt that it may be directly transmitted from one nursing to another by any one of the many ways of conveyance from mouth to mouth, by flies, or possibly even by air transmission of the floating spores.

*Occurrence.*—Thrush (synonym, Sprue; German, Soor or Fasch; French, Muguet; Dutch, Spruw), besides being common in infants, is frequently observed in young children and even in adults. This occurrence is not rare, especially in persons suffering from tuberculosis or marasmus. Freudenberg has observed thrush in perfectly healthy adults, although attempts to inoculate the disease upon the normal mucous membrane of the mouth in either the new-born or in older persons have failed. The reaction

of the mucous membrane during the first weeks of life is acid, while in older children and in adults it is alkaline. This fact makes thrush invasion easier during the earlier periods of life.

In the human organism the growth of the fungus limits itself, as a rule, to the epithelium of the mucous membrane of the mouth, intestinal tract, and vagina. It also occurs in the nasal cavity, larynx, trachea and bronchi, on the male genitalia, and on the eroded nipples and breasts of nursing women.

Very rarely the sub-epithelial mycelial growth penetrates deeper and invades the blood-vessels. A few cases have been recorded (Guidi, and more lately Huebner) which have shown true metastases in the lungs, kidneys, and other organs. Zenker reported a case, thus far unique, in which the fungus was found in multiple miliary abscesses of the brain. Very rarely a diffuse dissemination of the growth has taken place through the medium of the blood current, and a condition of general infection has developed, described as thrush septicemia. This probably was the cause of death in CASE III of this series.

*Morphology.*—The exact status of the thrush fungus as regards its botanical classification has not yet been well decided. It was formerly classed among the mould fungi and called *Oidium albicans*. Numerous experiments recently made by Plaut, Klemperer, Baginsky, Grawitz, Rees, and others point to the conclusion that the fungus of thrush is not a mould, but a bud fungus. This view is now adopted by most mycologists. Others, like Baumgarten, place thrush fungus in the class of *Torulacæ*, a middle position between the typical yeast and the mould fungi.

The shape of the cells of the thrush fungus depends in a high degree upon the conditions of cultivation. On acid, strongly saccharine media (plum-decoction agar) it generally appears in the form of quite spherical or oval cells. In media containing but little sugar and no acid (common beef-water-peptone gelatin) the cells bud out and develop into long threads (Compare Klemperer and Plaut.)

The single cells of the fungus are usually about  $5\mu$  in thickness and about  $100\mu$  in length. They proliferate in the following manner: At or near one or both ends a dilatation appears. This immediately fills with the contents of the cell and gradually a new cell is formed which finally separates itself from the old cell by means of a transverse wall. The old cell is called the "mother," the new one the "daughter" cell. The latter then

forms new cells in the same way. The "daughter" cells either separate themselves from the "mother" cells and lead an independent existence or remain connected with it to form branching colonies, looking when well developed and seen under the microscope not unlike a bunch of mistletoe.

Bud fungi are almost constant inmates of the oral cavity. If cultures from the acid food particles, present in dental cavities, be made on slightly acid or neutral gelatin, round, rapidly growing, opaque, white colonies will usually develop which, under a low power may readily be recognized as masses of yeast cells. These organisms being widely distributed by nature and finding their condition of growth best fulfilled in slightly acid or fermenting media, their occurrence in the human mouth is not surprising. Compared to bacteria, the bud fungi play an insignificant part in the oral cavity. They may be regarded as the most harmless of all the mouth parasites.

*Saccharomyces albicans*, the thrush fungus, is the only species of bud fungus thus far observed which possesses pronounced pathogenic properties.

Baginsky discovered that in test-tube cultures, on the surface of the gelatin, exposed to the air, thrush fungi form only round or slightly oval cells; those lying deeper develop into thick mycelial threads; those still deeper into delicate ones. This is a phenomenon which characterizes the growth of the fungus occurring pathologically in the tissues of the mouth. The small snow-white patches which first appear in the mouth are at first quite firmly adherent to the underlying mucous membrane; later they become less secure in their attachment and can easily be washed from the mouth. If the membrane thus removed be examined under the microscope, it is found to consist of epithelial cells, leukocytes, and detritus, between which can be observed the slender filaments of mycelia made up of small segments (hyphæ). These mycelia branch and interbranch until a rather firm network is formed as in many fungous growths. The branches themselves are of considerable length, as is shown in the illustration (Fig. 7).

The contents of these branches is clear and shows, as a rule, a glistening, highly refractive nucleus at each end. The rest of the contents is finely granular in parts and in other parts is quite clear. There are also found in the meshes of the mycelia loose masses of small egg-shaped bodies which are the spores (conidia) of the fungus.

This fungus can be grown experimentally upon acid gelatin plates in a Petri dish at the ordinary room temperature and forms snow-white isolated colonies. In agar or gelatin culture tubes in which a platinum needle smeared with the fungous growth has been plunged in the ordinary manner, a needle-shaped mass will develop with here and there whitish globular masses appearing along the line of inoculation.

Upon potatoes the growth is in small nodular, snow-white colonies.



FIG. 7.—Thrush fungus (*Saccharomyces albicans*).

*a*, Thrush fungus (mycelia composed of hyphæ); *b*, conidia; *c*, epithelial cells; *d*, detritus; *e*, leukocytes.

In culture material containing sugar and almost always upon the gelatin plate only the slender cells are produced, while in the mass in a culture tube these develop into true mycelia.

If an injection from the culture tube be made into the circulation of a guinea-pig, it will die in a short time and the internal organs are found infiltrated with the mycelia of the fungus.

*Diagnosis.*—The occurrence of thrush in the mouth is characterized by the white masses growing upon the mucous membrane and consisting of branched, curved, and anastomotic threads and also spores; the latter are found either at the free end of the threads or are quite free in the mass. Besides these, one often finds other free cells of fungous material which are not foreign bodies,

but are really a part of the developmental circle of the thrush fungus. These are called "buds."

To examine these masses of fungus for purposes of diagnosis it is only necessary to mix a small portion of the dislodged membrane with a little glycerin and put it directly under the microscope. If one wishes so stain the masses, a solution of alkaline methylene blue can be used. Before the growth is examined, it is best to allow the epithelial cells with the fungous growth to remain for a short time in a 5 per cent. solution of sodium hydrate. The specimens are best preserved in a glycerin mounting medium. To stain sections of tissue, either the alkaline methylene blue, carbol-fuchsin, or the Weigert modification of Gram's method is best. Any one of these procedures should easily result in isolation and identification of the growth.

*Differential Diagnosis.*—There are a number of diseases of the mouth occurring both in the new-born and in adults which present appearances closely simulating the growth of thrush. These must be borne in mind in clinical diagnosis. The writer has tried to show in the accompanying illustrations the principal conditions from which thrush is to be differentiated. They are still better shown by colored plates in the atlas of Mikulicz upon the "Diseases of the Mouth and Pharynx," Berlin, 1892. Unfortunately this atlas is now out of print. It is of interest because only after a very extensive search through the library of the Academy of Medicine was the writer able to find in it the single illustration of thrush that appears to exist.

*Bednar's Aphthæ (Bednar's Plaques; Ulcera Pterygoidea Palati).*—In nurslings and in young children, the extraordinary ease with which the mucous membrane of the mouth can be injured sometimes gives rise to diseases of traumatic origin. One of the most common of these is usually spoken of as Bednar's aphthæ. These palatine ulcers of the new-born always appear at a definite location, either at the point where the mucous membrane of the gums unites with that over the pterygoid processes or in the middle of the hard palate corresponding to the site of the so-called epithelial pearls. Experiences in lying-in hospitals have shown that these patches only occur in children in which the mouth has been habitually cleansed. If this practice did not exist, this form of aphthæ would never be observed. The etiology of this disease is therefore traumatic. The patches appear at that part of the buccal cavity where cleansing is easiest and where too great force is easily used. It is apparent that in sick nurs-

lings, especially in those where thrush exists, Bednar's aphthæ is most apt to develop.

The normal epithelial pearls so frequently observed along the median line of the hard palate of children are normal vestigial remains and of no pathologic import.

The habitual cleansing of the mouth before and after nursing so necessary to avoid the development of thrush in the new-born must be done carefully and especial care be taken not to rub the mucous membrane of the roof of the mouth with sufficient force to loosen the delicate layer of epithelial covering.

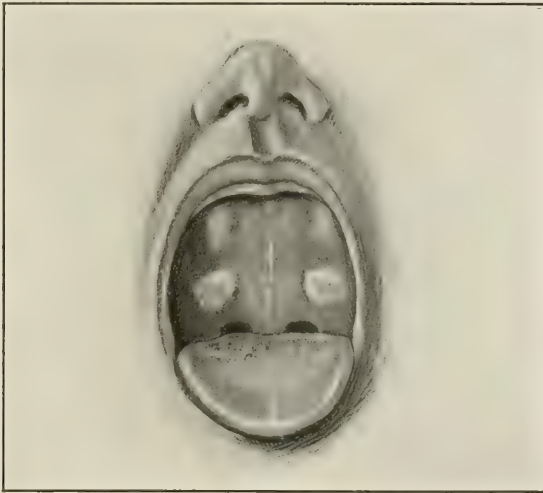


FIG. 8.—CASE VI. Bednar's aphthæ (Bednar's plaques, *Ulcera pterygoidea palati*).

Should the characteristic patches of Bednar's aphthæ develop, care and cleanliness are all that is necessary to effect a cure.

CASE VI. *Bednar's Aphthæ* (Fig. 8).—In this child, otherwise healthy, reported by Mikulicz, the two white plaques here shown developed four days after birth. During the next two days there was partial exfoliation and a symmetrical discoloration of the lateral portions of the adjacent mucous membrane of the gums. The posterior border corresponded to the crista marginalis of the posterior palatine foramina and from this line the plaque extended forward and inward to within 5 mm. of the raphé. Anteriorly the limit was marked by the transverse suture between the palate and the superior maxillary bones. Laterally the course of the palatine artery formed the line of demarcation.

A slender ivory-like line of slightly raised hardened epithelium extended along the raphé of the hard palate and at the middle

of this line were a few small "epithelial pearls" about the size of a millet-seed.

By the twelfth day of life the plaques were about half the original size and three days later had disappeared. The exfoliated mucous membrane was quickly replaced. No treatment was given.

The structure of the median line remained unchanged. It was not pathologic as similar epithelial pearls are often seen in the new-born.

*Acute Papular Glossitis (Glossitis Papulosa Acuta).*—This also is a very rare affection, first reported by Michelson, whose drawing is herewith reproduced. Mikulicz observed similar cases in Königsberg. In both instances women were affected who otherwise showed no especial disturbance. Fever, followed by a chill, prostration, loss of appetite, and headache preceded the attack. There then developed a burning pain in the tongue upon which there soon appeared small white flakes which gradually increased in size to 1 cm. in diameter. In some cases the prodromal symptoms were not present and the tongue was not painful. No syphilitic history existed. As the white spots increased in size a certain amount of erosion took place, leaving the center somewhat depressed and ulcerated. The border of the growth was sharply outlined. A greenish pus covered the affected area. The entire illness lasted for about three weeks and was accompanied by a moderate degree of profuse catarrhal stomatitis. The etiology of the process is thus far unknown.

The treatment followed the lines of local disinfection already indicated.

CASE VII. *Acute Papular Glossitis* (Fig. 9).—This patient of Michelson was a laboring woman, thirty-four years old, of Königsberg. She had been hitherto quite well and had never had any skin eruption. She was married and had two children, the youngest one year old.

On the fourth of July, chill and fever occurred accompanied by prostration, headache, and loss of appetite. She particularly complained of a burning pain upon the tongue whose surface at this time showed a number of minute blisters the size of a mustard seed. During the following day a number of other minute points appeared which rapidly increased in size. On the sixth of July about ten of these round eruptions appeared on the surface of the tongue about as large as the head of a pin and raised from  $1/2$  to 3 mm. above the adjacent tissue. The covering was of opaque milk-white color with a slightly yellow center. In the medium-sized papules a shallow dent appeared in the center. The adjacent mucous membrane of the border of the papules was intensely congested. Several similar papules ap-

peared on the inner side of the lips. The gums were moderately swollen and of the livid red color. On some of the teeth a creamy deposit existed. Slight salivation, marked fetor of the breath were present and the cervical glands were enlarged.

The drawing in this case was made on the seventh of July. Temperature at this time was  $101^{\circ}$ . Pain had diminished somewhat, but the other symptoms were unaltered. The efflorescence upon the tongue had materially increased in size and the borders of the adjacent papules had become confluent. Between the central depression and the periphery of the papule an intermediary zone of a brownish-red cotton-like appearance existed. The

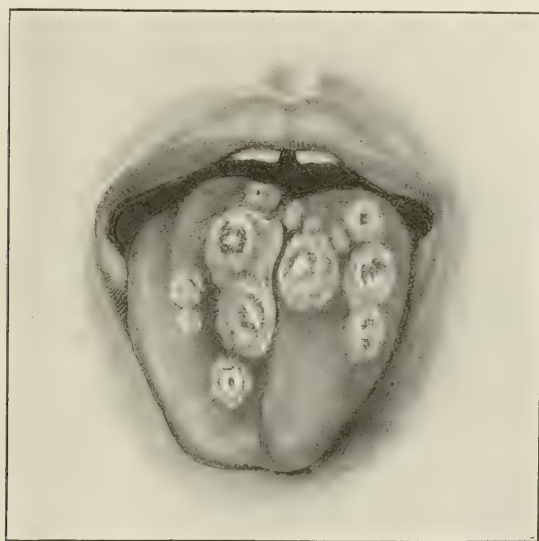


FIG. 9.—CASE VII. Acute papular glossitis (*Glossitis papulosa acuta*).

border about the larger plaques was less red than about the smaller and younger ones.

On the following day, the older papules had a uniform yellowish green, cheese-like appearance. A 4 per cent. boric acid mouth-wash was now begun.

On the following day all symptoms were noticeably less severe. Temperature was normal, and at the site of the former papules there appeared round deep erosions with red serrate edges and a pus-covered base. The symptoms of gingivitis were subsiding and the swelling of the cervical glands had disappeared.

On the fifteenth of July, the patient was entirely well. The mucous membrane was completely regenerated and no pathologic changes could be observed in the mouth.

The bacteriological and histological examination showed a

number of varieties of bacteria, but the exact cause of the disease remained unknown.

*Acute Aphthous Stomatitis* (*Aphthæ*; *Stomatitis Maculo-fibrinosa*).—This is one of the diseases most commonly mistaken for thrush. This name at the present time is applied almost universally to that disease of the mucous membrane of the mouth characterized by a rapid formation of circumscribed white plaques of epithelium arranged in layers and bound together by fibrinous exudate. To this, in 1823, Hillard especially restricted this old hippocratic name of *aphthæ*.

For our anatomical knowledge of this affection we are particularly indebted to the researches of E. Fränkel. The small masses of fibrin exuded upon the surface of the mucous membrane hold together many dead epithelial cells, and around this mass there is a red line of inflamed epithelial tissue.

Although the name of *Stomatitis Maculo-fibrinosa* is preferable to the uncertain appellation of *Aphthæ*, the latter is the name most commonly used.

The clinical picture of this disease is very characteristic: In a short time there appear, either singly or in considerable numbers, white or yellowish-white plaques, from 1 to 3 mm. in diameter or even larger. They are surrounded by a bright red, slightly elevated border. The outline of these plaques is sharply defined. The form, as a rule, is round or oval. After a short growth on the surface, these plaques usually cease growing and the fibrinous layer becomes loosened at the edges and finally falls off. Following its disappearance the epithelium, as a rule, is quickly regenerated. If the attack is more serious, similar patches appear in the neighborhood, and it is usual to find places showing all stages of this pathologic process. These develop in all parts of the mouth, but are least frequent upon the gums. Each patch is very sore and causes a sensation of severe burning. As a result of this, chewing, swallowing, and speaking are all painful. Pronounced salivation is a common accompaniment. A rise of temperature occurs and the general malaise is more pronounced at the beginning of the eruption. It is more common in babies from ten to thirty months of age, but it may also occur in children and in adults. Women are most apt to suffer from this affection during menstruation, pregnancy, or lactation. It is a frequent accompaniment of measles, scarlet fever, and other serious diseases. Its exact etiology is unknown.

CASE VIII. *Acute Aphthous Stomatitis* (Fig. 10).—This case

is reported by Mikulicz. The girl was fifteen months old. For three days restlessness, loss of appetite, and malaise were noticed. Both parents were recently syphilitic. Two days ago an eruption apparently of chicken-pox appeared. The child was well nourished and had several teeth, and the gums overlying the upper molars were swollen, red, and painful. In various parts of the mouth were numerous round or irregular pale yellow patches, slightly raised and surrounded by a red inflamed border. Brushing these patches with a camel's-hair brush caused no change in color, but the slightest touch caused the child to scream from pain. Pronounced salivation, fetid breath, and moderate swelling of the submaxillary glands existed.

The treatment consisted of a single daily application of 1 per cent. solution of nitrate of silver and frequent penciling with

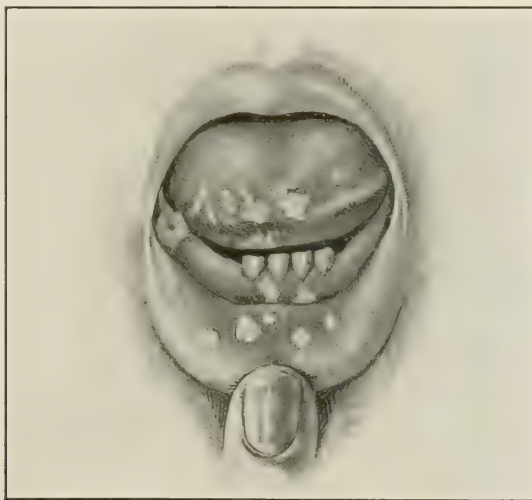


FIG. 10.—CASE VIII. Acute aphthous stomatitis (*Aphthæ, stomatitis maculo-fibrinosa*).

10 per cent. boric acid solution. In the course of twelve days the two molar teeth appeared and the stomatitis had entirely disappeared.

*Acute Gonorrheal Stomatitis (Stomatitis Gonorrhoeica).*—This condition, fortunately a very rare one, still may exist and for its recognition we are largely indebted to the work of Rosinski, who, after a number of observations in the new-born, accurately described the disease and demonstrated by histologic investigation the gonorrheal nature of the affection.

In the seven cases which Rosinski reported, the first symptoms developed from five to twelve days after birth. They

consisted in a diffuse stomatitis whose principal characteristic was a peculiar bluish or rosy-red streaked color of the mucous membrane of the mouth. Of especial value for the diagnosis was the appearance in sharply localized areas of a superficial layer of peculiar yellowish exudate. At first, only the epithelial layer was involved; this was slightly raised and lay upon the exudate as a smooth superficial mass. After about the third day, this epithelial covering was lost and the exudate itself appeared free upon the surface. The exudate, which at first was a yellowish-white, now became a clear purulent yellow. At the same time the surface of the exudate, at first barely prominent, became considerably raised above the level of the surrounding mucous membrane. As the disease progressed, there developed about this exudate a demarcation zone of a bright scarlet color which limited the line of inflammation more and more. A form of pseudomembrane developed, but soon this was replaced by a clear layer of medium-thick yellow purulent pus or a pulpy mass of the same color. Examination showed this mass to be composed of epithelial detritus, fibrin, and pus cells containing gonococci. If this pseudomembrane was removed mechanically, the smooth yellowish, and, in the later stages of disease, easily bleeding surface, appeared. Ultimately the normal epithelial covering was renewed with but slight or no scar formation. The back of the soft palate and the back of the tongue were the sites principally involved by this process. In two of Rosinski's patients, a gonorrheal ophthalmia also existed. The duration of the disease varied considerably: from four to six weeks were the limits observed. A complete cure occurred in all instances.

The localization of the trouble is so peculiar that the diagnosis can usually be made by this alone. A history of gonorrhea in the mother is of course important, and gonococci were demonstrated in all cases observed.

Since Rosinski's article first appeared, a number of other cases have been reported, although there is no doubt that the disease is a very rare one.

In the treatment of this condition, silver salts are of course of greatest value. The painting of the parts with a weak solution of nitrate of silver from  $1/4$  to  $1/2$  per cent. gives the best results.

The prophylactic use of the 2 per cent. solution of lunar caustic immediately after birth, as is done in the eyes by the method of Credé, is not to be recommended since the disease

is of such great rarity. The use of so strong a solution of silver in the mouth is easily followed by symptoms of poisoning.

CASE IX. *Acute Gonorrheal Stomatitis* (Fig. 11).—Rosinski's patient from whom this drawing was made was normal at birth. The mother at this time had an acute gonorrhea and the vulva was studded with acuminate condylomata.

On the fourth day gonorrheal ophthalmia developed.

On the eighth day gonorrheal stomatitis first appeared, and on the eleventh day, when the picture was made, the disease had reached its height. With the exception of the ulcerated areas, the mucous membrane of the mouth was a rosy-red. The roof of the mouth was chiefly affected by the inflammation, and the sharply defined outline suggested that of Bednar's plaques. A

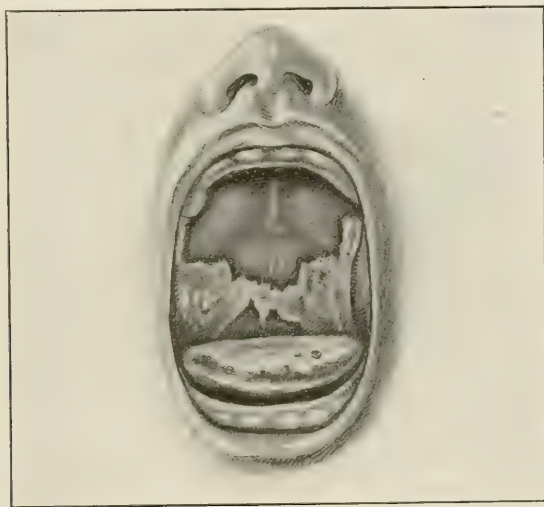


FIG. 11.—CASE IX. Acute gonorrheal stomatitis (*Stomatitis gonorrhoeica*).

grayish-yellow, slightly raised exudate existed upon the alveolar process, the greater part of the tongue, and the posterior half of the roof of the mouth. Each inflamed area was bounded by a bright scarlet line of demarcation. Gonococci were easily demonstrated in the exudate and in the epithelial masses.

Up to the eleventh day, when first seen, no treatment had been administered, but recovery had commenced and from this time on the growth of new epithelium from the border inward readily progressed. At the end of four weeks cure was complete and no scars remained.

*Chronic Recurrent Aphthæ*.—This appellation was given by Mikulicz to a rare but well-characterized affection not previously described in literature. Three cases occurred in his experience,

all in anemic chlorotic women from twenty to forty years of age. The disease followed a recurrent course. In intervals of from four to six weeks there suddenly appeared upon the edge of the tongue small mustard-seed ulcers with superficial loss of epithelium. Here and there at the beginning of the attack, minute blisters appeared surrounded by a line of inflammation. In the course of four or five days these spots increased to 2 or 3 mm. in diameter. The number of eruptions varied materially: sometimes only one; sometimes three or four, but rarely more. A general stomatitis of a mild type was present with a white-coated tongue and with impressions of the teeth visible at the edge of the tongue. A slight swelling of the mucous membrane of the lips and cheeks also occurred and moderate salivation. No fetor of the breath.

Spontaneous cure resulted, as a rule, after from eight to ten days, and either the mucous membrane was replaced entirely or else a slight scar was left at the site of the ulcer.

CASE X. *Chronic Recurrent Aphthæ* (Fig. 12).—This patient of Mikulicz was a seamstress, twenty-two years old. She was very anemic and her menstruation was irregular. For the preceding six months at intervals of from four to six weeks, small painful ulcers had appeared on the edge of the tongue. Pain first called her attention to the site of the coming ulcer. There then appeared an epithelial erosion the size of a pinhead. This had a slightly reddened border. During the next few days this ulcer became larger and deeper, and the base was covered with a yellow or greenish-yellow coating. The border increased in redness and became slightly raised and swollen. By this time the inflammatory changes were most pronounced and the remainder of the mouth also showed a general slight stomatitis. The tongue became heavily coated and was so swollen that along its border the outline of the teeth was easily seen. Slight salivation existed, but the breath was not especially offensive.

Restitution then progressively took place; the floor of the ulcer became clean, the inflammation slowly subsided, and the loss of tissue was steadily replaced. At the end of ten days cure was established and the cycle was completed.

The treatment consisted in the administration of iron and arsenic internally; in the use of some mouth-wash, such as chlorate of potash, boric acid, or alum, and in the use of the lunar caustic pencil upon the ulcers themselves. This last procedure caused a rapid cessation of pain, but the other treatment seemed to have but little effect one way or the other.

*Leucoplakia Buccalis* (*Psoriasis Linguae*, *Tylosis*, *Keratosis*, *Ichthyosis Buccalis*).—The name of *Leucoplakia Buccalis* was first introduced by Schwimmer to describe an affection of the

mouth characterized by an alteration of the epithelium of the mucous membrane of the mouth into more or less thick horny patches caused by a heaping up of the superficial horny layers of the mucous membrane. The swards thus formed rested upon the underlying mucous membrane whose veins were markedly dilated and whose tissues showed a round-celled infiltration. The papillæ are markedly attenuated and apparently increased in number.

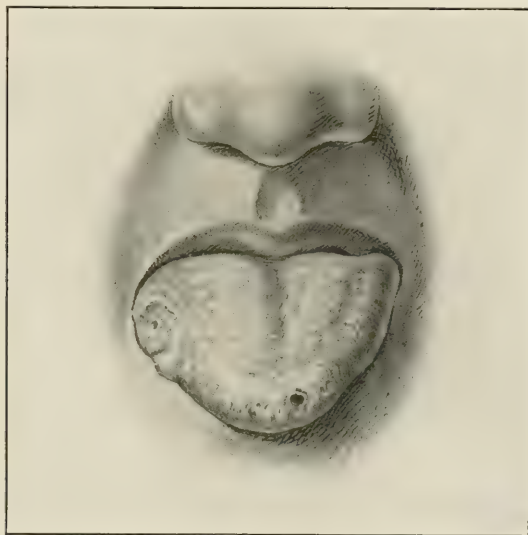


FIG. 12.—Chronic recurrent aphthæ.

Clinically these thickened rinds appear at first as smooth, dry, milk-white patches—hence the name. The youngest of these patches in point of development show a more rosy color and appear at first as if the tongue had been streaked over with a stick of lunar caustic. The underlying mucous membrane shows through them and gives to the early patches a more rosy hue. The older patches are scab-like in character and become a pure white, sometimes bluish-white in color, and oftentimes have a glistening appearance not unlike mother of pearl (plaques nacrées, Fournier). They are usually sharply separated from the surrounding tissue by an area of inflammatory redness of varying breadth, but as a rule less than 1 mm. broad. The longer this rind has existed, the more dense and leathery it becomes. At the same time, the edges are slightly loosened

from their attachment and as a result the patch is often mechanically torn from the tongue during mastication or by the tongue rubbing against the teeth in an effort to move what seems to be a foreign body in the mouth. If completely torn away, more or less bleeding occurs and there are left irregular scars or deep and painful fissures extending into the substance of the tongue itself. If small hemorrhages occur beneath the growth the overlying mass may become yellowish or even brown in color, but later, with the absorption of the exuded blood, the white color returns. All stages may be found in the mouth: from the delicate semi-transparent patches to the thick milk-white papillary growths.

Leucoplakia is most apt to occur at the anterior portion of the dorsum of the tongue, toward the tip and edges of the organ. The patches at first are small, but as growth progresses they coalesce to form larger islands separated by thin streaks or areas of congested mucous membrane.

The same changes are occasionally found on the inner side of the cheeks and lips. At the angle of the lips a particularly characteristic three-cornered patch is often observed radiating from the angle somewhat like the leaves of a fan. The formation of fissures is most apt to occur upon the tongue itself because here mechanical injury easily takes place.

The course of the process is an extremely chronic one, extending over not merely years, but decades. It is most common in the fifth or sixth decade of life and rarely appears before the fortieth year. In women, leucoplakia is a great rarity. The many names that have been applied to this condition from time to time show the confusion which exists as to its true nature. It is really a process peculiar to itself and has nothing to do with either psoriasis, ichthyosis, or syphilis. The opinion expressed by some writers that it is a late manifestation of syphilis is not a tenable one. Many patients who have suffered from leucoplakia for years become primarily infected with syphilis and secondary manifestations develop in the usual way.

The statistics of Erb and Neisser show that in a large number of typical cases of leucoplakia the history of syphilis can be excluded. The results of treatment of leucoplakia by anti-syphilitic medication, too, is an argument against the syphilitic origin of the disease: for such, treatment not only does no good, but oftentimes makes the condition worse. Syphilis, therefore, is not to be regarded as a direct cause of leucoplakia, but it is without doubt an important predisposing cause of the disease.

The cases reported by Schöngarth show that in 65 per cent. of the patients syphilis pre-existed.

Smoking, drinking of strong alcoholic beverages, and eating of highly spiced food are also important etiological factors. These habits, too, being much more common in men than in women, account for the greater preponderance of leucoplakia in men than in women. Various forms of digestive disturbances either in the stomach or intestines predispose to leucoplakia, and if they become worse the growth of the patches is increased.

In the majority of cases the discomfort experienced by the patient is very slight; not infrequently the disease is discovered quite accidentally. Deep fissures of the tongue usually cause severe pain and interfere with mastication and with speech, otherwise the sensation of the tongue over the affected areas is diminished. As the growths rise above the surface, they give the sensation of a foreign body in the mouth and this often attracts the attention of the patient to the condition of the tongue for the first time. If the man is suffering from syphilis, he often regards these patches as a manifestation of this disease. Other patients believe that cancer is about to develop. These two conditions are generally regarded by the laity with great apprehension and therefore many patients with leucoplakia become hypochondriacs upon this subject. They magnify their symptoms of discomfort in the mouth and attribute to the disease much greater importance than really attaches to it. There is a real reason for anxiety, however, for in not a few cases in which leucoplakia was first observed, an epithelioma of the tongue developed later, but it is not always easy to determine whether the cancerous growth took its origin in the leucoplakial patch, or in some other portion of the organ. The same causes of irritation of the tongue and mucous membrane favored the development of this form of carcinoma as well as of leucoplakia itself. The Atlas of Mikulicz reports a case in which epithelioma of the tongue developed in a long-standing area of leucoplakia. It would, however, be quite erroneous to maintain that every case of leucoplakia ultimately terminates in carcinoma. Moderate degrees of leucoplakia are far more frequently seen than severe cases of the disease and in many cases the condition remains stationary for years.

Unfortunately the disease is very resistant to all forms of treatment thus far devised. In the milder cases, antiseptic and slightly astringent mouth-washes can be used to keep the

mucous membrane in good condition and to allay the patient's apprehensions. Tincture of myrrh, tincture of nutgalls flavored with a drop or two of oil of peppermint, peroxide of hydrogen, and similar medications can be tried. No one of these should be continued too long as the taste of the patient varies materially from time to time. The use of tobacco in any form must be prohibited. If the teeth are broken or decayed, the pointed, useless roots should be extracted and the cavities filled. If smoking cannot be entirely discontinued, the number of cigars or cigarettes that are used daily should be limited to the smallest number possible. In fact, all causes of irritation of the mucous membrane of the mouth are to be removed.

The treatment of single patches of leucoplakia in obstinate cases is best done by means of caustics. Pure lunar caustic, a 50 per cent. solution of nitrate of silver, a 5 per cent. solution of lactic acid gradually increased to 50 per cent., chromic acid solutions, and, more recently, concentrated preparations of peroxide of hydrogen are all to be recommended. Salicylic acid is of value to aid in the dissolving and softening of the mucous membrane. A 2 per cent. solution of resorcin has been used. Rosenberg recommends the painting of the patches with pure balsam of Peru, allowing it to stay in the mouth for from three to five minutes.

Unfortunately in most cases, this entire list of medication proves to be of no value, and often this very lack of result confirms the patient in his belief that he has an incurable disease which will ultimately end in cancer. Many cases therefore give rise to a severe form of hypochondriasis, although, as a rule, the patient suffers but little discomfort. If speaking, eating, and drinking are interfered with, mental disturbance is still more apt to occur.

Some writers advocate that as soon as the patches of leucoplakia develop to any extent, they should be thoroughly curretted away and the base cauterized with the thermocautery. Or the tip of the tongue can be firmly grasped in a bit of gauze and with a sharp scalpel the patch of leucoplakia can be shaved off exactly as the skin is removed for transplantation.

Rinschhoff gives preference to the procedure of decortication of the skin after first sprinkling the affected areas with crystals of permanganate of potash. After this procedure there is often left in place of the sensitive rind a soft insensitive scar. Such a procedure can hardly be necessary in patches of small

size, but at any rate it prevents the later development of larger growths. The effect upon the patient's mental condition by the absolute removal of the growths by any of these procedures is usually a salutary one if the treatment be successful. On the other hand, if it be unsuccessful, these procedures only make the mental attitude of the patient worse. One is certainly

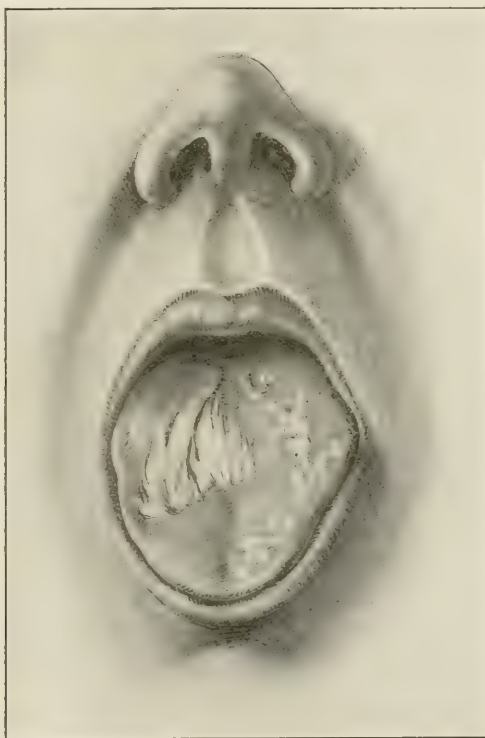


FIG. 13.—Leucoplakia oris (Psoriasis linguæ, tylosis, Ichthyosis buccalis).

justified in regarding the condition as harmless so long as the area of the lesion is not extensive.

The possibility of the ultimate development of an epithelioma should in all cases be stated to the patient, and if such a growth begins to develop, radical surgical procedures should be at once instituted.

The illustration herewith presented is a composite one from several sources and shows the various stages of leucoplakial growth. (Fig. 13.)

*Prognosis.*—In milder cases of thrush, where only the buccal cavity is involved and where the growth has been quickly observed and properly treated, the prognosis is good, and in this class are included by far the larger number of cases of thrush that are observed. Where the esophagus and stomach are involved and the digestion as a whole is impaired by the activity of the organism, more serious illness may result.

In the excellent chapter upon Diseases of the Mouth, given by Garrigues in his Text-book of Obstetrics, attention is called to the fact that thrush, diarrhea, and green stools are practically always associated with each other. The outcome is still more serious when the growth extends and involves the entire pharynx, larynx, and esophagus. In some cases reported the fungous growth has been so profuse that the lumen of the esophagus was obstructed, making the introduction of food impossible. In other instances the larynx was involved, causing hoarseness primarily and later mechanical dyspnea due to obstructive growth in the trachea and bronchi. In still other instances reported by Bühl and Virchow, the inspiration of masses of thrush led to bronchitis and pneumonia.

If the growth extends through the epithelium and into the underlying connective tissue, blood-vessels may be invaded and the metastatic abscesses already mentioned may develop in various vital organs. Thrush septicemia may also occur.

In none of the cases thus far reported has the writer been able to find a record of multiple miliary ulcers of the intestines resulting in numerous intestinal perforations and hemorrhage such as caused the death of the child in Case I.

Cases of such severity are fortunately rare, but in view of the possibility that the disease may assume a severe type, the prognosis must always be guarded if the growth of the fungus be extensive or if severe constitutional disease co-exist.

*Treatment.*—To use an hibernianism, the best treatment for thrush is to prevent its occurrence. A definite routine should be begun as soon as the child is first put to the breast and this should be continued throughout the first year of life.

The details of this treatment, so far as the care of the mouth is concerned, are as follows: A bag of cheesecloth holding a large handful of powdered boric acid is placed in a clean fruit jar; the jar is filled with boiling water and thoroughly shaken. After standing for a short time, a clear saturated solution of

boric acid results which can be replenished daily by filling up the jar with boiling water so long as any powder remains in the bag.

At the time of each feeding, whether from the breast or from a bottle, a small amount of the solution is poured into a clean tumbler. A wisp of absorbent cotton is wrapped about the little finger and, wet with the solution, is used to thoroughly cleanse the baby's mouth. If a small quantity be swallowed, it does no harm, although to prevent this it is better to hold the child on the lap face downward while the oral toilet is performed. After feeding the procedure is repeated.

The nipple is then wiped off with cotton soaked in the solution and the child put to the breast. When nursing is over, the nipple is again wiped off and a small annular mass of dry cotton is placed around it. On this mass, from an ordinary salt shaker, a little dry boric acid is dusted, and this absorbent and antiseptic dressing is held in place by means of a breast binder. Not only does this treatment prevent thrush in the child, but it also practically prevents maceration of the nipple epithelium by being kept wet with milk. Erosions or fissures rarely occur, and where this routine is carried out during the entire period of lactation, abscesses of the breast become practically unknown. Unfortunately, mothers thus escaping many of the alleged difficulties of nursing become careless, neglect these precautions, and, as a result, abscesses of the breast and thrush are both more common several months after labor than when the baby is only a few days old.

If nursing bottles are used, the rubber nipples should be habitually kept in a covered glass of boric acid solution when not in use.

If cases of thrush are seen where prophylaxis has been neglected, the same routine of treatment should be commenced at once. A moderate dose of castor oil should precede local treatment. To destroy colonies already established in the mouth and along the alimentary canal, some palatable antiseptic solution of boric acid should be administered before each feeding.

If the disease has become well established before treatment has begun, the mechanical removal of the masses of thrush from the mouth is not always easy, is apt to disturb the child already restless and irritable, and not infrequently is attended by bleeding from the mucous membrane upon which the growth has taken place. In such cases the suggestion made by Escherich

is an excellent one. He recommends that in young children a small mass of cotton be filled with powdered boric acid. This is enclosed in a layer of fine linen in the form of the "sugar-teat" so often used by mothers. This is then dipped into a 1 per cent. solution of saccharin and is given to the child to suck for a moment or two before and after each nursing. The child will suck the sweet mass readily and enough of the boric acid is carried in solution to act as an excellent mouth and intestinal disinfectant. If this procedure be followed the mucous membrane of the mouth can hardly be abraded.

The treatment of thrush must be chiefly prophylactic. Good air, good food, and above all, the removal of any fermentable substances from the nursery and the proper cleaning of the mouth after eating or drinking. If the fungus has already colonized, it must be combated by applying alkalines as, in common with other bud fungi, it does not flourish in an alkaline medium. This may be accomplished by a repeated wiping out of the mouth with a swab of cotton dipped into a 5 to 10 per cent. solution of bicarbonate of soda.

In more serious cases, various antiseptic mouth-washes have been advocated: a 1 per cent. solution of formalin or a 4 per cent. solution of permanganate of potash; some prefer the tincture of the chloride of iron.

In still more serious cases hourly painting with a solution of nitrate of silver in the strength of from 1-20 to 1-50 is prescribed.

Preparations containing honey or sugar are to be avoided as they furnish an excellent food for fungous growth. The borax and honey mixture so often used as a domestic remedy is to be prohibited.

For internal medication, a 1 per cent. solution of resorcin may be given in teaspoonful doses three or four times daily.

Small doses of salol are often effective, especially if intestinal fermentation co-exists.

Teaspoonful doses of a 1 per cent. solution of chlorate of potash every two hours has its advocates.

Garrigues gives the following excellent formula to use in those cases in which a green and fetid diarrhea exists:

℞ Bismuthi subnitrat., gr. xv (1 gram)  
 Resorcin, gr. v (30 centigrams)  
 Glycerini, ℥ij (8 grams)  
 Aquæ dest., q. s. ad, ℥ij (60 grams).—Misce.  
 Signa.—Shake well. A teaspoonful every two hours.

In those severe cases in which the growth of the fungus in the esophagus threatens to obstruct free ingestion of food, emetics should be used.

It is apparent that the roots of the fungus reaching into and even below the epithelial layer are not reached by any of these applications and from the remaining mycelia a new growth of fungus continually develops. For this reason the use of antiseptics which can be used with safety in the mouth is not always followed by a certain cure. Taken all in all, the saturated solution of boric acid, either used as has been directed in the prophylactic care of the mouth or after the manner advocated by Escherich, is the one most apt to give the best results. This should be combined with alternate swabbing of the mouth with the alkaline solution of bicarbonate of soda already mentioned.

Since thrush usually occurs secondary to some constitutional impairment or definite disease, it is apparent that treatment must also be directed toward the underlying cause of the trouble. If this be removed, the thrush itself may disappear without any special treatment.

The fact that thrush may occur in the mouth of any child during the first year of life should always be borne in mind, and the prophylactic measures just described should be made a part of the routine of all children coming under the care of a physician. Where prophylactic measures are systematically used, the disease practically is unknown; where they are neglected, it may occur at any time in either private or hospital practice and, far from being a negligible factor, may, under favorable conditions, lead to severe intestinal disturbances. In rare instances, as the history of the cases herewith reported shows, it may terminate fatally. It, therefore, deserves a wider recognition and consideration than is generally accorded it.

150 WEST FORTY-SEVENTH STREET.

#### BIBLIOGRAPHY: THRUSH.

Ashby, Henry. *Diseases of Children*. London: Longmans, Green & Co., 1889, p. 47.

Baginsky. *Deutsche med. Wochenschr.*, xi, 866, 1885.

Davis, Edward P. *Treatise on Obstetrics*. Philadelphia: Lea Bros., 1896, p. 473.

David. *Les Mikrobes de la bouche*. S. 161, Alcan, Paris, 1890  
de Rothschild, H. *Le Progrès Médical*, Mar. 3, 1900.

Edgar, J. Clifton. *Practice of Obstetrics*. Philadelphia: Blakiston, 1904, p. 913.

Flügge. *Loc. cit.*, siehe S. 119.

Freudenberg, A. *Centralbl. f. klin. Med.*, vii, Nr. 40, 1886.

Frühwald. *Jahrbuch f. Kinderklinik*, xxix, 200, 1889.

Garrigues, Henry J. *Text-book of the Science and the Art of Obstetrics*. Philadelphia: Lippincott, 1902, p. 806. Especially good.

Grawitz. *Virchow's Archiv.*, lxx, 566, 1877, und lxxiii, 147, 1878.

Hirst, Barton C. *Text-book of Obstetrics*. Philadelphia: Saunders & Co., 1903, p. 863.

Jewett, Charles. *Practice of Obstetrics*. New York and Philadelphia: Lea Bros., 1901, p. 644.

Kehrer. *Ueber den Soorpilz*. Heidelberg, 1885 (with very complete bibliography).

Klemperer. *Centralbl. f. klin. Med.*, vi, 849, 1885.

Mikulicz, J., and Michelson, P. *Atlas der Krankheiten der Mund- und Rachenhöhle*. Berlin: Hirschwald, 1892, plate XXX, Fig. 4.

Mikulicz-Radetzky, J., und Kümmel, W. *Die Krankheiten des Mundes*. Zweite Auflage, neu bearbeitet von W. Kümmel, mit 77 Zum Teil farbigen Abbildungen im Text. Jena: Verlag von Gustav Fischer, 1909, p. 61. One illustration of thrush.

Miller, W. D. *Mikroorganismen der Mundhöhle*. Leipsic: Georg Thieme, 1892, 8vo, p. 448. Ill. Fig. 131.

Plaut. *Baumgarten's Jahresbericht*, etc., *loc. cit.*, i, 149, 1886.

Plaut. *Centralbl. f. Bakteriologie u. Parasitenkunde*, i, 527 (Referat), 1887.

Quain, Richard. *Dictionary of Medicine*. 8vo., p. 1816. Article by W. Fairlie Clarke. One illustration of fungus. D. Appleton & Co., 1884.

Ranke, H. *Jahrbuch f. Kinderheilkunde*, xxvii, 309, 1888.

Rees. *Verzeichende Morphologie und Biologie der Pilze*. S. 405. Leipzig, 1884.

Reynolds, Edward, and Newell, Franklin. *Practical Obstetrics*. Philadelphia: Lea Bros., 1902, p. 467.

Tweedy, E. Hastings, and Wrench, G. T. *Rotunda Practical Midwifery*. London: Frowde, 1908, p. 417.

von Jaksch, Rudolf. *Klinische Diagnostik*. Wien und Leipzig: Urban & Schwarzenberg, 1892, pp. 92, 100, 174, 455.

Weichselbaum, Anton. *Pathologische Histologie*. Leipzig, Wien: Deuticke, 1892, p. 183.

Wesener, Felix. *Medicinisch-klinische Diagnostik*. Berlin: Springer, 1892, p. 222, 334.

Wrench, G. T. *Rotunda Midwifery for Nurses and Midwives*. London: Frowde, 1908, pp. 287.

Wright, Adam H. *Text-book of Obstetrics*. New York & London: Appleton & Co., 1905, p. 494.

BIBLIOGRAPHY: SPRUE (PSILOSIS).

- Brown, W. Carnegie. Sprue and its Treatment. London: J. Bule, 1908, xiii, 259 pp., 1 pl., 1 cht. (Psilosis.)  
Manson, Sir Patrick. Tropical Diseases. New York: Wood & Co., 1909, p. 465. (Psilosis.)  
Thin, George. Psilosis or Sprue: Its Nature and Treatment, with Observations on Various Forms of Diarrhea Acquired in the Tropics. London: J. & A. Churchill, 1897, xii, 270 pp., 3 pl.
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TRANSACTIONS OF THE NEW YORK  
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SECTION ON PEDIATRICS.

*Meeting of November 11, 1909.*

ELI LONG, M. D., *in the Chair.*

CEREBRAL DIPLEGIA WITH OBSTETRIC PALSY.

DR. MATTHIAS NICOLL, JR., presented a boy three years old, a mulatto, who was admitted to an institution when seven months of age. The first recorded history was in May, 1908, when he was eighteen months of age; then the statement was rendered, "subluxation of shoulder, anterior poliomyelitis, rachitis." The subluxation was marked and there was slight power in extension of the wrist and in supination. He had a marked rachitis and a lumbar kyphosis probably due to the latter condition. The history obtained from the outside nurse was that the child had an attack of whooping-cough when about nine months old when it was noted that he did not move his arm. Both legs were also involved, although apparently gaining in motion. The reflexes were exaggerated. The child talked but little and his intelligence was limited.

CEREBRAL DIPLEGIA.

DR. NICOLL also presented a girl six years old, who had been admitted to the hospital when three weeks of age. Her birth history was not known. The paralysis was first noticed by the wet nurse when the child was eight months of age; the child was then returned to the hospital and had been under observation since. Until the past year she had not made any attempts to stand even with support. Her intelligence had developed slowly but steadily and was now of a fair order. Both patella reflexes were exaggerated. Her method of walking was demonstrated.

## DISCUSSION.

DR. WILLIAM P. NORTHRUP said that the second case presented by Dr. Nicoll he had lectured on for three years in his clinic. During that time he had not been able to help her very much. He was glad to note some improvement in her condition now. This was one of the most pathetic cases he had ever known. The improvement had been so very little and there seemed to be no encouragement to offer and the child strived so hard to use her limbs. Now he believed she had ceased to improve. He concurred in the diagnosis made, but he could see no future for the child.

DR. SAYRE said that in a good many of these spastic cases, improvement would follow stretching the legs and keeping them stretched for a good part of the twenty-four hours, so as to overstretch the contracted muscles in order that the anterior shin group, and the extensors of the thigh could act without undue opposition. These patients should also receive systematic instruction in coordination of their muscles, and in making voluntary efforts. He had seen many patients who were enabled to walk, and acquire the ability to get around without assistance, through the employment of these methods. In many cases which he had sent to Mrs. Seguin, of Orange, where there were mental and muscular deficiencies, the improvement had at times been marvelous. In the case under consideration, the calf muscles were so contracted that the patient could not put the heel to the floor. Dr. Sayre thought that by stretching these muscles the heel could be placed upon the floor and the patient thus enabled to balance better than she now did. In the present case tenotomy probably would not be necessary. The co-ordination of movements was to be taught by exercises very similar to those used by Fraenkel in cases of locomotor ataxia.

## EXTENSIVE PARALYSIS DUE TO ANTERIOR POLIOMYELITIS.

DR. OSCAR M. SCHLOSS presented this patient for Dr. Roland G. Freeman. This was a case of anterior poliomyelitis with extensive paralysis which involved the thoracic respiratory muscles. Previous to the onset of the disease the child was perfectly well, could hold its head erect, and was able to support its weight. The onset nine weeks ago was sudden with fever, convulsions, vomiting, diarrhea, and these acute symptoms lasted three days. At the end of this time the mother noticed that the child could not hold its head up, and that all four extremities were powerless and that the respirations were more rapid than normal. The child was admitted to Dr. Long's clinic at the New York University and Bellevue Medical College. At this time it was noted that all four extremities were partially paralyzed. The child was able to move the hands and feet, but otherwise the extremities were powerless. The respirations were entirely diaphragmatic and the anterior neck muscles were

paralyzed. An ankle reflex was present, there was no perceptible knee-jerk, but a slight contraction of the quadriceps could be felt. None of the reflexes could be obtained in the arms. Sensation seemed to be intact. During the three weeks the child had been under observation there had been a noticeable improvement. The right arm could be moved and the shoulder muscles alone seemed paralyzed. The left leg could be flexed and extended at the knee-joint, but movement at the hip was still very defective. The left arm and right leg were still powerless and the respirations were entirely diaphragmatic.

#### PARALYSIS OF ABDOMINAL MUSCLES.

DR. MARSHALL CARLETON PEASE presented these cases for Dr. Henry Dwight Chapin.

The first child developed anterior poliomyelitis about five weeks ago; some four weeks later it developed a pneumonia, and with this pneumonia appeared the paralysis of the abdominal muscles which seemed to include the external rectus, possibly the internal rectus, particularly of the left side.

The second child developed whooping-cough last July, and there still were signs in the right chest.

The third child had what appeared to be a recrudescence of the anterior poliomyelitis. This patient had been operated upon for mastoiditis.

#### DISCUSSION.

DR. WILLIAM P. NORTHUP, speaking of complete paralysis of the thoracic muscles, the work of respiration being done by the diaphragm, said that he had seen probably four or five such cases in his life. The first case presented by Dr. Schloss for Dr. Chapin came to his clinic at the Bellevue Medical College, and he asked those present to examine it carefully. He recalled a case seen last week in the accident ward of the Presbyterian Hospital. A man was brought in on the ambulance. He overheard the remark that there was something queer about the case. The patient was a laborer and he had fallen from a scaffold and received a scalp wound, and nothing else could be found. However, both his legs were paralyzed; they had no power in them whatever. The arms, however, were all right. It was then noted that the thoracic muscles were not working, while the diaphragm was working well. This man grew worse. He was turned over to see if there was any back injury, but none was found. The next day Dr. Northrup inquired how the patient got along. The coroner found the sixth cervical vertebra had been driven in, mashing the spinal cord to a pulp.

Dr. Northrup presented some photographs of three cases of paralysis of the abdominal wall due to poliomyelitis.

DR. HENRY W. FRAUENTHAL presented several photographs of children with hernia or bulging through the abdominal wall, similar to the two cases shown by Dr. Wm. P. Northrup.

He presented a case similar to the one of Dr. Henry D. Chapin's with paralysis and atrophy of the thoracic muscles which, when he was presented at the Hospital for Deformities and Joint Diseases, in August, 1907, had all the muscles of the extremities and trunk involved, also the diaphragm was still involved. He was referred to this hospital by Dr. Henry Koplik, hoping that in the event of death from pneumonia, due to the involvement of the diaphragm, an autopsy would be performed.

Under massage, high frequency and sinusoidal electricity he finally regained the perfect use of his legs and left arm, the right arm being still involved, but the pectoralis major and minor together with the other muscles of respiration have not as yet responded.

This case with others was reported in the AMER. JOUR. OBST. of April.

#### THE NEW TREATMENT OF SPASTIC PARALYSIS BY RESECTION OF POSTERIOR SPINAL NERVE ROOTS.

Dr. L. PIERCE CLARK presented this communication. There was a twofold motor disturbance in the extremities as a result of damage or destruction of the superior pyramidal tracts, namely, contraction and weakness of various muscles. The character and completeness of the injury of the pyramidal tracts gave the peculiar type of contraction and paresis of the different muscles in the several types of spasticities. Complete hemiplegia as the result of total destruction of all the pyramidal tract of the opposite side was rare. As a rule, hemiplegia underwent some degree of spontaneous cure, but whole series of movements could be performed only with incompleteness and difficulty. When the pathway of excitability of muscles from the cortex by way of the pyramidal tracts was destroyed or severely damaged, the irritability of the muscles from the periphery, as the result of sensory impressions was not only preserved, but was more or less heightened. The pyramidal path also inhibited the lower spinal reflex and in the lessened control permitted an insubordinate activity of the lower spinal centers. The objective evidence of the enhanced reflex irritability in the lower arc was shown in the spastic syndrome of increased knee-jerk, ankle clonus, Babinski reflex, etc. As a rule, the greater the absence of voluntary motion, the greater the reflex activity. Aside from the involuntary associated movements in the diplegics, they had a more or less late, but permanent, spastic muscular contracture which did not disappear on ether narcosis. These contractures prevented motor functions by offering more or less resistance to extension. The inhibiting function of the pyramidal tracts was independent throughout of the function producing spasticity. When the seat of entry of the posterior or sensory roots were diseased, as in tabes, the reflexes were abolished. Many surgical procedures had been undertaken to restore the normal balance in the spinal reflex arc in diplegics. In a review of the

different plans of surgical relief for these motor defects one was struck at once with the almost unanimous point of attack to which surgeons had heretofore addressed themselves; they had endeavored to reduce the excess of motor pull on the spastic muscles by reducing some part of the motor apparatus. It was frequently admitted that the degree of muscle tone in an extremity was determined by the sensory impression from the parts and especially from the muscles. Tonic spasm might therefore be regarded as an augmented degree of this state due to various causes. The motor part of the reflex arc was obviously beyond attack, for while the contraction would be temporarily relieved, a complete palsy of the muscles involved would result. Neurectomy in the peripheral nerves proper could not be employed as these consist alike of sensory and motor nerves. The posterior sensory roots were the points of attack if one sought the sensory side of the arc. Just what part and how much of the sensory stimuli might be removed to gain the desired end, flaccidity was even yet not clear. The best point of attack on these sensory nerves was in the spinal canal, dorsal to their ganglion. Dr. Taylor, therefore, operated at this point. The work of Forster and Tietze and Gottstein was then briefly summarized.

The first case presented was a boy eleven years old whose history was negative except a cerebral diplegia secondary to meningoencephalitis induced by a very severe attack of malignant scarlet fever at eleven months of age. The boy's paralytic syndrome was typical. With this spastic handicap the boy was able to walk by very short steps without assistance, but with arms extended. Various orthopedic measures failed to materially help him. Inasmuch as they had at that time no positive guide regarding the amount of resection necessary the dorsal roots of but one side, the left, were resected. They were the last dorsal and five lumbar. The operation was performed August 23, 1909, by Dr. Taylor. On the fifth day after the operation the patient was entirely free from pain. One week after examination there was a greatly reduced spasticity in the whole left leg, there was a great reduction in the reflexes, there was absence of ankle clonus and an imperfect production of the Babinski. The crossed leg progression was succeeded by quite a straddling-skating gait. The patient now stood and walked alone. Later further operation would be undertaken.

The second case was an eighteen-year-old boy who had suffered from left hemiplegia from birth. The typical infantile hemiplegic syndrome developed, the arm and leg were moderately undeveloped, the left forearm was contracted on the arm at an acute angle, and the hand was flexed at more than a right angle at the wrist. The fingers were in extension and could just be moved. The whole extremity was in a "birdwing" contracture and spastic. The patient was feeble minded. Three days ago Dr. Taylor resected the dorsal nerve roots from the fourth cervical to the second dorsal inclusive. A rough examination of

the patient two days after operation showed anesthesia in the lower two-thirds of the whole length of the arm. The arm was entirely free from spasticity. Tenotomy, physical training and orthopedic appliances will be employed.

#### DISCUSSION.

*The Surgical Technic.*—DR. ALFRED S. TAYLOR stated that the technic in resection of the posterior spinal nerve roots differed somewhat from that of an ordinary laminectomy; in the latter they removed the spinous processes and more or less of the laminae of both sides. Tietze had complained that there was great difficulty after doing a laminectomy in exposing the posterior roots of the spinal nerves. In doing an ordinary laminectomy the portions removed were near the median line. It occurred to Dr. Taylor that if he could get sufficient room through a unilateral exposure, he would not only come directly down upon the nerve roots but would leave the spines intact, and this would be a very efficient operative procedure.

The operation consisted in making a longitudinal incision just to one side of spinous processes; the muscles were separated from the spinous processes and were retracted from the laminae themselves outward to the articular processes of the vertebrae. Then by means of a Doyen saw, he sawed through the lamina at the base of the spinous process and also near the articular process. One might get from one-quarter to one-half an inch of room by cutting outward toward the articular processes. After making a double line of sections, the parts could be lifted and removed by means of bone forceps. To get under the remaining laminae he used the rongeur forceps, leaving a clean-cut entrance between the bones, thus coming down upon the dura. Then the highly vascular layer of fat was divided, and whatever hemorrhage occurred here was readily controlled by pressure. The dura was exposed and slit longitudinally, fully exposing the spinal cord.

Dr. Taylor had made many dissections. He showed pictures of spines in which laminectomy was performed, showing well the exposure he obtained. One picture showed the conditions before, the other after opening the dura mater. One-half the lumbar enlargement as well as one-half the cauda equina was clearly visible. The lower cord itself could be readily turned 90 degrees without injury to the lumbar enlargement.

It seemed to Dr. Taylor that this method was adaptable for exposing tumors of the spinal cord. After an ordinary laminectomy there resulted a marked deformity of the back, and a part of the cord was not protected by bone.

#### DEMONSTRATION OF A CASE AFTER LIMITED RESECTION.

DR. ALFRED S. TAYLOR presented this patient. In operating upon this boy he worked through a groove about three-eighths of an inch wide. There was at present no loss of function in the spine. The spine was flexible laterally and antero-posteriorly.

Dr. Taylor also presented two cases upon whom he intended to operate, one being a case of infantile cerebral diplegia and an epileptic as well.

DR. CHARLES OGILVY had previously seen the patient presented by Dr. Taylor when he had been unable to walk without a shuffling gait; he then had great difficulty in raising the feet from the floor. The spasticity was then decidedly more marked than it is at present. It was very difficult to describe in so many words the improvement in a case of this kind, as it was more of an improvement of the conditions than a cure of them. Dr. Ogilvy intended to have had the patient walk with braces and crutches; in fact he had been measured for braces.

The second case reported by Drs. Clarke and Taylor presented very marked contractures; these are still present after the operation, but without doubt these contractures can be readily corrected.

The exposure made of the cord by Dr. Taylor was certainly beautiful, and the hemorrhage was much less than one had in doing an ordinary bilateral laminectomy. The patients did remarkably well. Both patients had done splendidly. The second case was practically well the day following the operation.

#### DISCUSSION.

DR. JOSEPH FRAENKEL said that in order to understand the rationale of this mode of treatment of spastic paralyses, it would be necessary to say a few words about the diagnostic and prognostic interpretations of the reflexes. Ten years ago Dr. Fraenkel made a study of the relationship of the tonus of the tendons to the reflex phenomena by means of an apparatus devised by Moskens of Utrecht (*New York Medical Record*, December 12, 1903). Among the conclusions reached in this study, the one having particular reference to the subject in question read: "That disease of the pyramidal tracts causes hypertonia and increase of reflexes. The tendon jerks under such conditions are increased unless additional disease of the ascending tracts, anterior horns or some part of the peripheral neurons neutralizes this influence." The loss of motor function in spastic conditions was in direct proportion to the reflex spasticity. It appeared then rational to add sensory disease wherever the loss of motor function was considerable. From this theoretical consideration he hesitated to take the practical step because there was uncertainty as to the outcome and difficulty in finding a quantitative gauge. Dr. Beer, at Dr. Fraenkel's suggestion, tried the influence of stovain injections into the nerve or cerebrospinal fluid. The immediate results obtained were quite convincing in the shape of marked return of motion, disappearance of spasms, ankle clonus and Babinski signs. These beneficial results lasted of course as long as the influence of the stovainisation and with the disappearance of the anesthesia thus produced, the spastic phenomena became

reestablished. He said he was glad to hear that the experiments on the living, and the work done by Foerster, gave further corroboration of the correctness of this therapeutic measure. It would be necessary, however, to be very careful in the selection of cases adapted for this mode of interference. First of all, it appeared that cases of extreme spastic contractures would derive benefit from posterior nerve cutting by having their inordinately stiff, useless extremities changed into more or less flaccid ones. The other cases, cases with subcortical sensory implication, should be excluded on account of the irritative motor phenomena (chorea, athetosis, etc.) arising from such lesions and the liability of their becoming aggravated by additional sensory disease. Concerning the operative technic he emphasized the fact, that the severance had to be made so that the intervertebral ganglion was left in connection with the peripheral stump, in order to avoid dystrophic consequences.

DR. VIRGIL P. GIBNEY said that so far as the operation itself was concerned, they were waiting to see results which promised at present to be favorable. He had never seen a case of spasticity overcome, although he had seen improvement in some cases. He had divided the hamstring muscles, the tendo achillis, the adductors of the thighs, and had even removed *en masse* the tensor vagina femoris to get rid of the spasticity; the correction lasted for months, sometimes even for years, and he hoped the spasticity was overcome; but it would creep back on him and at last he became skeptical about ever being able to finally abolish it.

DR. EDWARD D. FISHER said that the operation was one that was likely to produce a temporary paralysis, but even that might be better than the spasticity, especially in the more severe cases. The operation cut off the sensory impulses passing to the brain. There was a proper physiological basis for this operation. Two things had been accomplished; muscular flaccidity and the removal of irritating impulses to the brain. The contractions, or contractures taking place in the arms or legs were caused by sensory impulses passing to the brain and then passing down the cord as motor impulses; and again being caused primarily by impulses from the brain itself.

Therefore the value of the operation was a double one; it had a double value. It first reduced the spasticity, and might also improve the cortical condition, not by regenerating the cells, but by removing the source of irritation and giving them a rest. It might thus have an influence in reducing the tendency to epileptic seizures. Dr. Fisher believed that it was well worth while to go on with this work, and have it fully demonstrated by many cases, and see what the later results would be.

In observing the boy Dr. Taylor presented, he noticed the reflexes were returning. It was possible all the sensory fibers did not decussate in the spinal cord.

The question of the removal of sensory irritation had been

taken up by other methods and with the same results. It made no difference whether it was by cutting the posterior spinal nerve roots, or by destroying the nerve itself, or impairing its function.

In these cases he thought the operation a justifiable one and that there were hopes for it in the future. The selection of appropriate cases was very important. Those in which there was the least mental impairment would prove the most successful.

DR. T. HALSTED MYERS said that these cases divided themselves into classes according to degree and some cases could be improved by educational methods of treatment and training. In the severer contractures one must decide whether there was a permanent structural muscular change, or whether the deformity was due to the spastic condition itself. If there were structural changes in the muscles, he thought operation was indicated and should be the first step taken, making full division of the tendons and muscles. If sufficient improvement did not result, he thought, then, from a description of the operation, that it might help. He would look for results.

DR. SAMUEL LLOYD was very much interested in the work previously done along the line of section of the posterior nerve roots. In this work there was to be considered the question of regeneration, and just how much that would bring back the spastic condition of the patient at a later date. The operation might give a cortical rest and, in that way, it might cause an improvement in the spasticity. We must, however, wait and learn what the conditions are. The question of regeneration of the posterior spinal nerve roots and destruction of the cord, which many had in mind, was a very interesting one. It had been suggested by Dr. Dana and Dr. Abbey and others, in fact the hope had been made, that by using the posterior spinal nerve roots impulses might be carried to the destroyed segment of the cord, and in that way get impulses into the lower cord. In the cases experimented on, they got no such results.

With regard to the operation, Dr. Lloyd disagreed with Dr. Taylor with regard to the difficulty or results of removing the lamina. A single incision was made; then a section of the spinous process was made at its base; it should then be lifted with the attached muscles at the side, and incised. This would leave the spinal processes intact. The laminae then can be removed by means of an osteotome or a Gigli saw, as one chose. In this way he thought they would get a better approach.

There was a tremendous amount of difference among different patients with regard to the amount of hemorrhage. In one patient it may be a very small affair; whereas, in another patient, with dilated veins, one met with a great deal of hemorrhage. But it was seldom that they met with hemorrhage that was at all sensational.

Removing a full lamina gave a field of approach to the spinal cord and enabled one at once to get at the posterior spinal nerve

roots without rotating the cord 90 degrees; in the upper part of the spinal cord it was not so movable as in the lower portion.

DR. LLOYD was impressed with the slight deformity which followed the operation. The spinous processes did not fall in and they did not get a weakened spine. The laminae filled up afterward; there was a bony regeneration.

DR. CLARKE in closing said that one must remember that the resection of the dorsal nerve roots was done *dorsal* to the sensory nerve ganglion and that this point of resection insured absolutely no regeneration of the nerve or return of the former spastic element. Furthermore, the ganglion being left on the peripheral portion equally insured against the supervention of trophic changes in the peripheral structures. The work was to continue on a large series of cases and scientific reports would be issued from time to time.

DR. TAYLOR, in closing, wished again to call attention to the fact that Tietze had complained of the unsatisfactory approach to the posterior roots by means of the usual bilateral laminectomy, whereas his own (Taylor's) method brought the operator directly down upon the roots sought, and the roots of the opposite side could be divided, if necessary, through the same incision.

Replying to the remarks in favor of bilateral laminectomy, he stated that the method which gave the most convenient exposure with the least loss of bony structure was certainly to be preferred, and that unilateral laminectomy fulfilled these conditions.

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## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Nasal and Aural Discharge in Children.**—Percy Fridenberg, (*Trans. Amer. Ped. Soc.*, 1909) calls attention to the form of middle-ear disease which in children frequently appears as an acute catarrh tending to diminish or for a time to cease entirely under conditions, particularly climatic changes, favorable to a diminution or cessation of the secretion in the posterior nares, recurring with every cold in the head as well as with any affection of the respiratory tract or with acute infectious diseases, and occasionally "coming back" again without any evident nasal discharge, at least for the first few days. The tendency to recurrence causes an apparent chronicity with more or less extended intervals of what seems to be a cure. The first symptom is often the appearance of a stringy, mucoid or slightly muco-purulent discharge, frequently bilateral, after a variable period of snuffles, with little or no systemic disturbance, slight fever if any, and no pain. Aural examination generally shows a large perforation

with a pale membrane, or at least no inflammatory reddening, and no canal changes at all. The benign character of the process is indicated by the absence of all bone involvement and of mastoid complication, and of marked local or constitutional reaction. Secondary infection from the external auditory canal may change the secretion to a frankly purulent discharge and a true otitis with danger of bone involvement or mastoid complication may be engrafted on the original comparatively benign affection. In some of these cases pain in the ear, headache with occasional dizziness, diminished hearing and an old fetid discharge from the ear suggest the advisability of a radical mastoid operation. They should be promptly and thoroughly treated by conservative and quite effectual means, viz., removal of the source of infection in the posterior nares or accessory sinuses by appropriate procedures, whether medicinal or operative.

**Use of Antidysenteric Polyvalent Serum in the Treatment of Infantile Dysentery.**—P. Coyne and B. Auché (*Jour. de Méd. de Bordeaux*, August 15 and 22, 1909) report eight additional cases of infantile dysentery treated by various physicians with antidysenteric serum of polyvalent form, with excellent results, which confirm the already published cases. The general condition is very quickly improved, with a rapid lowering of temperature, and stopping of tenesmus. The number of stools rapidly decreases, and after a few days the stools are normally fecal. In very severe forms of dysentery the improvement is rapid, and a cure is obtained in much less time than under any other form of treatment. Many cases are cured which would die under the older forms of medication.

**Septicemia from Bacillus of Eberth and Paratyphoid Bacillus in the Nursling.**—H. Triboulet, L. Ribadeau-Dumas, and Boyé (*Arch. de Méd. des Enfants*, August, 1909) state that infection by the typhoid bacillus is very seldom typical when it occurs in a nursing child. The temperature is irregular; rose spots are often absent; the diarrhea is not typical; while the nervous symptoms are pronounced, resembling those of meningitis. There are stiffness of the neck, convulsions, and marked prostration. Sero-agglutination and blood cultures allow the diagnosis to be established definitely. Pulmonary signs are frequent and symptoms of meningitis are the rule. There is often more of the aspect of a toxic septicemia than of typhoid. The bacillus in circulation in the blood determines death, with ecchymotic and degenerative lesions of the viscera, the lungs, and meninges, not of the intestine. In the adult intestinal localization is the rule; in the infant it is the exception. The question is how the nursing infant becomes infected. It cannot be through the milk unless the mother has the disease, and even then some authors deny the presence of the bacilli in the milk.

**Diphtheria of Intestine.**—R. E. McKechine (*Mont. Med. Jour.*, August, 1909) records an unusual case of dysentery in a girl six years old. Shortly before leaving Fiji, the child was taken ill

with what seemed a mild dysentery, and the condition persisted throughout the trip of two and a half weeks. On arrival at Vancouver, the child was found emaciated, and very much exhausted. The dysentery had been fairly well held in check by treatment, but she was having several small stools daily, stained with blood and consisting of mucus and pus. Some were of pure mucus—about half a pint at a time—and contained enormous quantities of streptococci. These rapidly disappeared under treatment with streptolytic serum, but the symptoms did not abate. Finally cultures showed bacilli of the diphtheritic type. At once anti-diphtheritic serum was used, with immediate improvement of the symptoms, and two days later a complete cylindrical cast of the bowel, about four inches in length, was passed. The child made a slow but uninterrupted recovery. The cast was examined microscopically, and proved to be a true diphtheritic membrane. The patellar reflexes were absent. Later the patient developed paralysis of the anus for a couple of weeks.

**Streptococcic Infection in Diphtheria.**—The frequent occurrence of isolated phenomena about the twelfth or thirteenth day of an attack of diphtheria was first called attention to by Sevestre and Martin. The phenomena which they described consist of one or more of the following: (1) a cutaneous eruption (most frequently scarlatiniform, but in a few cases a simple erythema); (2) joint pains; (3) albuminuria; and (4) general constitutional disturbance, more or less marked. Sevestre and Martin suggested that the frequency with which these phenomena developed on or about the thirteenth day seemed to indicate that they were the symptom-complex of a secondary disease, with an incubation period of thirteen days, the infection occurring at the time of invasion of the diphtheria. They further suggested that the cause was organismal and probably streptococcic. Bacteriological examinations of the throat by D. M. Mathiesen (*Lancet*, November 20, 1909) showed in nine out of eighty cases of diphtheria a marked streptococcic infection at some period of the disease. Fifty-five per cent. of the streptococcic cases developed "thirteenth day" symptoms; and 2.8 per cent. of the nonstreptococcic cases developed these symptoms.

These results seem to suggest that there is some connection between the streptococcus infection and the "thirteenth day" phenomena.

**Impossibility of Demonstrating a Specific Protoplasmic Poison in the Diphtheria Bacillus Differing from that of the Common Protein Bacteria.**—Giulio Funaioli (*Rivista di Clin. Ped.*, Sept., 1909) has made experiments on animals with a view to demonstrating a specific protoplasmic poison in the diphtheria bacilli, but has not been able to show its existence. He finds that such poisons are produced by all bacteria, and that the poison from the diphtheria bacillus differs in no way from that of other pathogenic microorganisms. There exists in the dry, washed, dead, or living bacilli a poison which is common to all pathogenic

bacteria. It causes elevation of temperature. No immunity to this poison is acquired as there is to the other toxin of the disease. Serum prepared by injecting bacteria into animals causes no immunity to this poison. The action of bactericidal sera results from the fact that they are bivalent.

**Vulvovaginitis and Vulvitis of Children.**—Lespinne (*Prog. Méd. Belge*, Aug., 1909) states that vulvitis or vulvovaginitis may occur at any period of life, from the day of birth, aside from gonorrhea, and that it is far more curable than has been generally supposed. It results in general from a lack of cleanliness which allows of the inoculation of the vagina and vulva with some of the ever-present microorganisms. It may result from irritation of fecal and urinary solids, rectal worms, the propagation of neighboring dermatoses, or a general malady, such as measles. There is a form of epidemic vulvitis which is common in institutions. Under proper treatment the affection can be cured in six to eight weeks. In the contagious forms the affection is liable to become chronic if the vagina is involved. Treatment includes three indications: first, absolute cleansing and disinfection of everything that is used about the child; second, local treatment with unirritating antiseptics and later nitrate of silver; third, improvement of general condition of the child.

**Pathology of Thymic Hyperplasia and Status Lymphaticus.**—A. S. Warthin (*Arch. Ped.*, Aug., 1909) gives a brief outline of 41 cases showing thymic hyperplasia at autopsy and summarizes and discusses them. He believes that the status lymphaticus, or the condition of thymic hyperplasia, has no specific pathologic entity. It is a collective pathologic complex. Hyperplasia of the thymus (aside from leukemic, lymphocytomatous, tuberculous and other enlargements) is an expression of a hypoplastic constitution associated with, or dependent upon, a chronic lymphotoxemia or a congenital hypoplasia of the lymphoid tissues, or an altered function or disturbed development of the thyroid, adrenals, sexual glands, or osseous system occurring during the period of development. The hyperplasia of the thymus is compensatory in nature. It constitutes the most important feature of the conditions grouped under the complex of status lymphaticus. In young children the hyperplasia of the thymus is the most prominent feature. At puberty, and after, the constitutional hypoplasia that has been styled the status lymphaticus becomes more prominent. The two conditions are essentially the same and borderland cases of all stages and degrees occur. In young children and more rarely in adults the hyperplastic thymus may cause a mechanical death from pressure, chiefly upon the trachea, but also upon great vessels and nerves. This is probably the most common cause of the so-called thymus death in infants and children. In adults cardiac death is the rule, as a result most probably of disturbed correlation of thymus, thyroid, and adrenal function. The occurrence, however, of thymic stridor, thymic tracheostenosis,

and mechanical thymic death has been demonstrated beyond all doubt. The underlying lymphotoxemia and its cause may also cause death directly or indirectly. The lymphotoxemia and general hyperplasia create an especial susceptibility and lowered resistance to infections.

**Congenital Dislocation of the Hip.**—J. J. Clarke (*Lancet*, Sept. 25, 1909) reports eight ultimate cures in a series of twelve operations by the following method, one improvement, and three failures. The operation consists in exposing the joint from behind, making a small opening in the lowest limit of the posterior aspect of the capsule, and introducing an elevator to raise the periosteum and with it the cotyloid ligament for a short distance at the upper and posterior borders of the acetabulum. Next three stout silk stitches are passed in turn through the periosteum thus raised into the joint cavity under the cotyloid ligament, out of the capsule again and through a fold of the capsule, then once more through the capsule near its femoral attachment, where the two ends are tied. These stitches remove the overdistention of the back of the capsule and hold the cotyloid ligament over the outer part of the head of the femur. The limb is put up in plaster.

**Infantile Malaria.**—Jean P. Cardamatis (*Ann. de Med. et Chir. Inf.*, September, 1909) has made a careful examination of the statistical tables of the antimalarial League of Greece to ascertain the morbidity of infant from malaria. He finds that during the nursing period the infants is least subject to malaria of any time of its life. Children under three months are less often attacked than from that age up to twelve months. All nurslings show a relative immunity during the first month of life. Morbidity is less during the first year than later, probably on account of the care taken to protect the infant by mosquito nets. Malaria is more frequent in the second and third years, and attacks older children just as it does adults. The author does not believe that congenital malaria exists, or if it does it is extremely rare. The examination of the blood of infants under one month, whether of mothers infected or not with malaria, has not shown the parasites to be present. The parasites have been found in the placenta on the maternal side, but very few on the fetal side, and no anatomical alterations of the placenta were found. It has also been observed that infants born of mothers having malarial cachexia have been in florid health when born. The parasites cannot be transmitted to the fetus through the placenta, probably because there are antitoxic substances in the placenta which prevent the transudation of poisons. No organisms have been found in the umbilical cord. Infant malaria is both acute and chronic. Children have all types of the infection, tertian being the commonest. Natural immunity is seen in some cases, while in others the effect is very slight. Malaria is irregular in infants, some of the stages being absent. Gastro-intestinal symptoms and meningitic symptoms predominate. The older

the child, the more typical the attacks. The most important symptom of chronic malaria is the splenic enlargement which is immense, the organ occupying sometimes the entire abdomen. The anemia of malarial cachexia gives the child's skin the appearance of wax. The frequency of malarial infection in Greece is very great.

**Tuberculosis in Nurslings.**—H. Barbier (*Ann. de Méd. et Chir. Inf.*, September, 1909) says that in nurslings who have tuberculosis it is usual to find a tuberculous heredity. The effect of this is dependent on which parent had the disease, and the extent and evolution of the disease at the time of conception and during pregnancy. It is certain that tuberculosis is a frequent cause of abortion, just as syphilis is, the infection of the ovum at conception causing the death of the fetus, and abortion in consequence. In hereditary tuberculosis we may have failure of nutrition without finding any characteristic lesion of tuberculosis at autopsy. In other cases the lesions do not vary at all from the typical tuberculosis of adults. There may be congestive pulmonary lesions, dyspepsias that are intractable, degenerations, or other atypical conditions, yet still caused by tuberculosis. In atypical tuberculosis the toxemic origin of the troubles from the mother is probable. Degeneration of the liver, which may be entirely fatty, is common. This is an excellent reason for the obstinate dyspepsias that are seen in such children, with intolerance of milk and other foods, that are benefited by no change of diet, and end in death. Hepatization of the edges or posterior portions of the lungs may be found. Hypoplasia of the viscera, liver, kidneys, arteries, and heart may be seen. Such children are weak, meager, pale, and cachectic; digestion and assimilation are at fault; oxidation fails; the toxicity of the urine is increased. They are especially liable to infections, and the secretions of skin and mucous membranes are lessened. There are degenerative lesions of the viscera, and at the same time generalized tubercles throughout the body in the form of caseous masses, true tubercles, or gray granules are seen in the brain. The diagnosis of tuberculosis is very difficult, because no typical symptoms characterize the condition. The mortality from tuberculosis during the first year of life is very great. The pulmonary lesions are small, while the glandular ones are more important, many glands being caseous. There may be a tubercular bacilemia with septic fever, or a granular meningitis, or an acute bronchopneumonia. Chronic cases may be of an ulcerative type, with large or small cavities, resulting from caseation of tuberculous deposits of small size or of large masses of bronchopneumonic consolidation. They may also be of the sclerotic type with dilatation of the bronchi, or there may be multiple cold abscesses.

**Cerebrospinal Meningitis in the Nursling.**—A. Lesage (*Bull. Méd.*, September 15, 1909) describes the course of cerebrospinal meningitis in the nursing child. Here there is danger of mistak-

ing the disease for other less serious affections, since the symptoms are not always typical. The general symptoms are agitation, lack of appetite, refusal of milk, diarrhea, hyperesthesia, and cries which give evidence of suffering. These symptoms may indicate gastroenteritis instead of meningitis. But the patient is stiff, there is Kernig's sign, and the face looks upward from contraction of the neck. The fontanelle is distended. Optic atrophy is frequent, as is loss of hearing even when the symptoms have not seemed to be severe and diagnosis has not been made. The abnormal forms of the disease are a paralytic type in which the head falls about like that of a new-born infant; a mild type with indefinite symptoms; a tetanic type; a convulsive type, and a cachectic type with oscillations of temperature; a comatose type and a hyperesthetic form of the disease, with intense nervousness, nystagmus, and strabismus. Lumbar puncture with the finding of turbid fluid and meningococci will make possible a positive diagnosis in these cases.

**Relation of Duodenal Ulcers to Atrophic Conditions of Infants.**

—H. F. Helmholz (*Arch. Ped.*, Sept., 1909) has previously reported nine cases of pedatrophie complicated by duodenal ulcers, and he now adds the notes of seven more. Since all sixteen cases have been observed within six months, he thinks it probable that duodenal ulcers are of quite common occurrence in atrophic infants and that they are frequently overlooked, especially when attention is not called to them by such features as hemorrhages, peritonitis, and pyloric stenosis. The difficulty of seeing the ulcers at autopsy is great unless there are hemorrhages in them. A method which has been of service to insure the finding of all the ulcers is the following: The duodenum is spread out flat on a piece of blotting-paper and allowed to harden in formalin. Cross sections, 2 mm. in thickness, are cut of the entire duodenum and each section in turn is held up against a light background. In this way the ulcers are readily seen as small cup-shaped indentations in the otherwise smooth surface of the mucosa. Sometimes the hardening alone will bring out ulcers which were not visible in the fresh state. It seems probable that the ulcers are related to extreme atrophy rather than to pyloric spasm as suggested by others. A definite relation between the ulcers and a particular kind of food is unlikely. The pathology of the ulcers is covered almost entirely by that of the adult. In only three of the seven cases were there any symptoms. Hematemesis and melena are practically the only diagnostic symptoms, though it is not improbable that chemical tests for blood might point to the presence of ulcers when the hemorrhage was so slight as to be invisible macroscopically. In very acute cases the transfusion of blood, which has been successfully performed in melena of the new-born, might be tried. To combat the loss of fluid, physiologic salt solution may be given per rectum and hypodermically. When the infant has recovered from acute symptoms, it is very essential that it

receive breast milk, beginning with very small amount (90 to 100 grams per kilogram of body weight), and only after the child has ceased losing weight should the amount be slowly increased.

**Hirschsprung's Disease.**—D. P. D. Wilkie (*Edin. Med. Jour.*, Sept., 1909) records five cases of this condition which is known also as idiopathic dilatation of the colon. As to its causation he suggests a modification of the anatomical theory. Acknowledging that the anatomical structure of the pelvic colon in newborn infants and young children does predispose it to kinking with obstruction, and that this anatomical factor does play a considerable part in the causation of many cases, he holds that a primary overdilatation of the pelvic colon with meconium is an important cause. If overdilatation has taken place at or before birth the pelvic colon may have the same trouble in emptying itself as an overdistended bladder does. The primary overdilatation results in hypertrophy of the bowel wall and also in further distention. The relation which the hypertrophy bears to the dilatation determines the fate of the case. Where the hypertrophy fails to keep pace with the dilatation we get early obstructive symptoms with distention and frequently death from toxemia in infancy or early childhood. Where the hypertrophy is sufficient to compensate for the dilatation, the child may reach adult life, suffering only from a slightly swollen abdomen and a certain degree of constipation. Adult life being reached, compensation does not usually fail till the degenerative changes of old age begin to set in; then, from fibrous changes occurring in the hypertrophied wall, compensation fails, the bowel dilates further, and leads to the well-known symptoms. In support of this, it is worthy of note that it is extremely rare to meet with a case appearing for treatment between the ages of twenty-two and forty, although numerous cases have been reported where the patient was over fifty years of age.

**Infection of the Urine and Urinary Tract by Bacillus Coli in Infancy.**—J. L. Morse (*Amer. Jour. Med. Sci.*, Sept., 1909) says that in the majority of cases of infection of the urinary tract in infancy with the colon bacillus there is nothing about the symptomatology to direct attention to the urinary tract. When such symptoms are present they are usually mild and are easily overlooked. Consequently the urine should be examined in all diseased conditions with indefinite symptoms in infancy, especially if febrile, and no physical examination should be considered complete or diagnosis satisfactory in obscure conditions in infancy unless the urine has been examined. In fact, in the vast majority of cases the diagnosis can only be made by the examination of the urine. The writer favors the use of alkalies for this condition and has found them more efficient than hexamethylenamine, which, however, should be used if they fail. If there is still no, or very little, improvement and the case is becoming chronic, autogenous vaccines should be tried.

**Chorea a Symptom, not a Disease.**—G. M. Swift (*Amer. Jour.*

*Med. Sci.*, Sept., 1909) states his belief that the normal condition of childhood is constant muscular activity and that anything that weakens the child weakens the nervous control and may permit unrestrained muscular action. He divides all cases of so-called chorea into five classes: Class I comprises the many cases which occur in the spring or autumn months, most commonly in nervous girls between the ages of seven and fourteen, who are overstudying and are "run down." Such incoordinated muscular movements and hysteria of young adults seem entirely analogous. The treatment is rest in bed in a quiet room with an excess of plain nutritious food, tonics, and, during the acute stage, quieting drugs. Removal to the country is often of great value. Class II consists of cases due to infections, malarial, pneumococcic, post-typhoidal, and especially rheumatic. The writer believes the incoordinated movements in these cases are brought about by the infectious process causing profound anemia and malnutrition or innutrition of the control centers, motor and sensory. Rest in bed for an indefinite time, drugs to combat the infecting germs, and removal of the ordinary channels of infection, such as adenoids and decayed teeth, are indicated. Class III includes the grave cases, so-called chorea major, which are really cases of septic or malignant endocarditis. Class IV, or Huntington's chorea, may be regarded as due to arteriosclerosis of the vessels of the motor cells. Class V, chorea gravidarum, is due to a toxic state or to nervous depression in a pregnant woman, and the movements are only symptomatic. Other conditions showing incoordinated movements doubtless occur. The cause of such movements should always be sought, so that treatment may be directed toward the causative element.

**The Artificial Nursling.**—V. Wallich (*Ann. de Gyn. et d'Obst.*, September, 1909) describes a new device for removal of the milk from the breasts when the infant is unable to nurse. The apparatus, called the succipump, is so arranged that there is a return current of air into the aspirator at each stroke of the piston. Thus it simulates the action of the infant in suckling. In five or six minutes a considerable amount of milk may be obtained which may be fed to the infant with a spoon or through a nursing bottle. The aspiration must be made slowly and with intervals of rest such as the child gives in nursing. The pump may be so arranged that the mother may empty her own breast by placing her foot in a stirrup which fixes the pump, and pumping with one hand while she holds the reservoir with the other. The author gives examples of successful use of the pump in his own experience. Its value is seen in bad shaped nipples, cracks, lymphangitis, and abscess of the breast, in debility of the newborn child, in diseases like convulsions, and in harelip. This method allows of mixed feeding with cow's milk and mother's milk at the same time. Its use may avoid syphilitic contamination of wet-nurses by suspected infants.

**Use of Sterilized Linen for Nurslings.**—Edmond Weill (*Lyon*

*Méd.*, September 26, 1909) believes that he has demonstrated the value of sterilized clothing against the infections that are liable to occur in an old and unhygienic institution, which, by long occupation, has become infected with various microorganisms. Such buildings have to be used in the Children's clinic at the University of Lyon. Before the use of sterilized linen many of the little patients contracted streptococcus infections of the skin, and some died of them. Since he has made use of only sterilized clothing, these infections have become rare. The infections consisted of pemphigus and pyodermitis of various forms. Children with varicella would be severely sick from a mixed infection. Sterilized linen has a curative as well as prophylactic effect in these infants. Trial of series of children side by side in the same rooms was made, one series being arrayed in sterilized, another in simply washed garments. Those whose garments were merely laundered had dermatitis, while the others escaped. If the sterilized linen ceased to be used the previously healthy infants would be seized with dermatitis. In those cases already affected the use of sterilized clothing would bring about relief of the dermatitis in twenty-four hours. Bacteriological examination of linen that was simply laundered showed many colonies of streptococci and staphylococci. Since these experiences the author has all the clothing sterilized in bags in which it remains until it is to be used.

**Joint Tuberculosis with Special Reference to its Pathology.**—Leonard W. Ely (*Med. Rec.*, October 2, 1909) presents some interesting deductions based upon the clinical histories and laboratory examination of forty-eight specimens from forty-five patients. Of these, forty-five were joints, one a specimen of bone alone, and two of tendon sheaths. The specimens were furnished by 12 operators, some of them men of great ability. Of the ten joints in which no tuberculosis was found, nine sent to the laboratory with a diagnosis of tuberculosis. On the other hand, four joints were sent in as nontuberculous, in which tuberculosis could be demonstrated by the microscope. It may be argued of the former class that tuberculosis may have been present in the specimen and may not have been discovered in the laboratory, or may have died out. This is, of course, possible, but the number of such cases must be very small, for any tuberculous process capable of giving symptoms justifying a resection or amputation would almost invariably produce changes in the joint so marked that they could be recognized by a careful pathological examination. These observations show that no pains should be spared in arriving at a correct diagnosis before proceeding to a radical operation on a supposed tuberculous joint; and that we should accept with great reserve any statistics of tuberculous joints cured by conservative means, when these statistics are based upon the unsupported clinical opinion of the man who has compiled them. The writer gives an outline of the pathology of joint tuberculosis of the primary bony type and of the primary

synovial type and emphasizes the large percentage of cases apparently of the latter class among his own specimens. It has become the custom to regard all cases of joint tuberculosis as due to a bony focus. In opposition to the arguments advanced to support this opinion, he says that if all the articular ends of the bones, sawn across near the joint, present no evidence of any involvement, and if the synovial membrane in its entire extent and in its entire thickness is filled with tuberculosis, the possibility of primary synovial tuberculosis must be seriously considered. Again, it seems unlikely that a tuberculous process, starting in the bone, would make its way directly to a joint and involve the entire synovial membrane without spreading at all in the bone. Often in the cases known to be primarily bony, the superficial layers alone of the synovial membrane have been involved, as would naturally happen if the disease broke through into the joint from outside, while in the primary synovial type the membrane is involved in its entire thickness. Considering the very evident effort of nature to immobilize a joint as soon as tuberculosis appears in or near it, and the uncertainty that resection will remove the entire process, the writer says that possibly hereafter, in treating tuberculous joints, less effort will be expended in preserving motion, and more in obtaining ankylosis. We shall not dread the wearing away of the joint cartilages, but shall rather encourage it. We have thought for a long time that the crowding of the bone ends together by muscular spasm tended to the same thing, and have expended all our efforts to overcome it, instead of regarding it as one of nature's efforts at cure. The conservative treatment by weight-bearing and immobilization—that is, by plaster of Paris—in disease of the knee and hip seems more in line with this theory than the older method of stilting and traction. The writer feels that a most cursory examination of these joints will convince anyone of the futility of the operation of curetting as usually practised. A tuberculous process involving a synovial membrane in its various folds and ramifications, and running up under the joint cartilage into bone, perhaps with a distinct bony focus, is not to be eradicated by blindly thrusting a sharp spoon into the joint and scraping away at random. It is also better to take long chances of life and death than to resect a joint of a child.

**Typhoid Bacilli in Breast-milk.**—As an explanation of the mode by which nursing infants may contract typhoid fever, C. H. Lawrence (*Bost. Med. and Surg. Jour.*, July 29, 1909) reports a case of typhoid fever in which the typhoid bacillus was isolated from the breast-milk during the course of the disease though no signs of local inflammation were present.

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## ORIGINAL COMMUNICATIONS.

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### INJURIES TO THE PUERPERAL UTERUS.

BY  
EDWIN B. CRAGIN, M. D.,  
New York.

THE goal sought in every parturition is the delivery of a living, uninjured child without such lesion or infection of the parturient canal as will cause either morbidity during the puerperium or subsequent discomfort to the patient.

It is well known that any lesion of the parturient canal predisposes to infection and so long as the uterus is the most important portion of this canal as far as infection is concerned, the importance of the subject before us is clearly seen. For purposes of discussion injuries to the puerperal uterus will be considered under two heads.

#### (a) INTRAPARTUM INJURIES AND (b) POSTPARTUM INJURIES.

Furthermore, for completeness of the study, some license will be taken and the term "puerperal" made retroactive so as to include the emptying of the pregnant uterus during the early months of gestation, whether this abortion was intentional for good medical reasons, or whether the intent was criminal. Although injuries to the uterus at term are of chief importance and will receive the most of our attention, injuries during an induced abortion are common enough to deserve our consideration. The writer will only incidently refer to perforations of the pregnant uterus in the early months by long stiff instruments as sounds, catheters, knitting needles, umbrella wires, etc., in

the hands of the abortionist, or the patient herself driven to desperation in the desire to empty the uterus of the products of her conception.

Instances of these injuries are too familiar in the experience of members of this society who are connected with large hospital services. While the treatment of these injuries might well lead to fruitful discussion, lack of time compels the writer to pass on with the mere statement that the danger resulting from these injuries depends chiefly upon three factors:

1. The amount of infection carried to the uterus and peritoneum by the instrument.
2. The question of intestinal injury.
3. The amount of laceration and hemorrhage.

While many cases of uterine perforation with clean instruments have recovered without operation or other treatment save rest, the list of those who have lost their lives from infection of the peritoneum either from the dirty perforating instrument or from the escape of the contents of the perforated intestine, is far too large in spite of skilled surgical intervention. Of more interest to the conscientious obstetrician and gynecologist are the injuries which sometimes occur in the hands of men as skilled as we are, when emptying a uterus in the early months of pregnancy in order to save the life of the would-be mother. The two injuries most common under these circumstances are 1. extensive laceration of the cervix during instrumental dilatation, and 2. perforation of the uterus by curette or ovum forceps in cases where the cervix is too rigid to allow of sufficient dilatation for the introduction of the finger and the use of it as the extracting instrument. Those who have seen the nonpregnant cervix which was being gradually and carefully dilated with a glove-stretcher dilator suddenly split to, or above the vaginal junction without apparent excuse, can understand how such an accident may occasionally occur in a case of rigid or cicatricial cervix associated with early pregnancy. The writer knows of only one way to avoid this accident and that is to prepare the cervix for dilatation by a preliminary softening. This may be accomplished by an intracervical and vaginal gauze tamponade, or by the introduction into the cervical canal of a small elastic bag.

The perforation of the clean pregnant uterine wall by the curette or ovum forceps is thought by some men the result of carelessness and impossible in their hands. Yet this injury has occurred in the hands of so many good men that its possibility

must always be considered. The uterine wall in pregnancy is softened; it may be thin and relaxed and in these conditions, without extreme care, perforation is easy. The procedure which seems to me most likely to avoid this accident is to have the fundus of the uterus steadied by the hand of an assistant or nurse while the operator introduces his curette or ovum forceps (the writer prefers for this purpose a fenestrated sponge holder) as carefully as he would use a delicate probe until the fundus is reached and identified, applying what little force is used solely in the outward stroke. This same rule of delicate introduction should be followed in each application of the instrument.

One other possible injury to the uterus at this period is the continuance of the curettage beyond the limit set by nature in her discharge of the products of conception. It must be remembered that the ovum and decidua are all that should be removed and that deeper scraping, going through the endometrium and removing portions of the muscular structure is likely to lead to subsequent trouble, perhaps hyperinvolution, amenorrhea and sterility. The surest way of avoiding this fault in technic is for the operator, especially one of limited experience, to use instruments which although stiff, are blunt.

Advancing now to the completion of gestation, intrapartum injuries will once more be first considered, and again lacerations of the cervix during artificial dilatation stand out predominantly. It is unusual before the birth of the child to have serious hemorrhage resulting from laceration in manual dilatation of a rigid cervix, yet the writer has seen such a case in consultation where a most skillful obstetrician had simply stretched with the fingers of one hand a cervix which had long resisted nature's efforts at dilatation. The hemorrhage had almost exsanguinated the patient and her life was saved with difficulty.

The hemorrhage in this case occurred many hours before the birth of the head and may well impress the lesson of care needed in dilatation even when the cervix is thinned by labor and the canal tamponed from above by the vertex. The two conditions which are most often associated with intrapartum injury of the uterus, are eclampsia and placenta previa with the accouchement forcé which is so often employed in their treatment.

In eclampsia emptying of the uterus has been so uniformly followed by improvement in the condition of the woman, that the dictum is generally accepted, *given an eclamptic seizure proceed to empty the uterus.*

The writer believes that this dictum should be modified by the additional clause "as soon as is consistent with the condition of the cervix."

If the cervix is short, soft and in the condition usually called dilatable, it can generally be dilated by accouchement forcé with relatively little laceration, if the dilatation is done carefully, gradually, and without too much haste. On the other hand, if the accouchement forcé and delivery are performed in a case with long rigid cervix without previous preparation, the cervix after delivery will often show deep lacerations extending to the vaginal junction, perhaps even into the lower uterine segment. The writer remembers at least one case in which in the hands of a member of the Interne Staff this laceration extended completely through the lower uterine segment into the peritoneal cavity, and this in spite of the constant advice of the attending obstetrician who was standing by his side and supervising each step of the operation.

Considering the frequency of extensive lacerations of the cervix in accouchement forcé when performed in the case of a long rigid cervix, the question naturally arises, Is the eclamptic patient with uterus emptied but with extensive cervical lacerations and considerable shock better off than she would have been with uterus emptied a few hours later, after preliminary softening of the cervix with an elastic bag which had made dilatation easier and extensive laceration less probable? In general, the writer believes this question can be answered in the negative, and in his own work both in his service at the Sloane Maternity and in his private practice he makes it a rule in cases with long rigid cervix to soften and prepare the cervix for dilatation by the introduction of an elastic bag before resorting to accouchement forcé. In the rare cases where the cervix is so long and rigid that the elastic bag either cannot be introduced or does not accomplish its purpose, the so-called vaginal Cesarean section has its limited field.

There is one other condition in which accouchement forcé is sometimes resorted to and in which, to avoid extensive uterine injury, a word of caution may not be out of place, *i.e.*, placenta previa. With the low implantation of the placenta and the accompanying inroads of the chorionic villi, the cervix and lower uterine segment, although perhaps rigid at the ring of the external os, are often more friable than usual and in the endeavor to speedily reach a foot and by drawing it down make the thigh

and half breech serve as a uterine tampon, extensive laceration even amounting to uterine rupture, has too frequently occurred.

This accident can best be avoided by considering the possibility of its occurrence; by preliminary softening and dilatation of the cervix by the elastic bag, or gauze tamponade, and by gentleness of manipulation striving, in the endeavor to avoid the Scilla of hemorrhage from the placental site, not to run on to the Charybdis of hemorrhage from uterine rupture.

No discussion of intrapartum uterine injury is complete without a consideration of that most serious injury known as uterine rupture.

Reference has already been made to extension of cervical lacerations into the lower uterine segment resulting from mechanical dilatation of the cervix. The form of uterine rupture however which deserves chief consideration, because in most instances avoidable, is that resulting from version in cases in which version should be considered contraindicated. Some idea of the frequency of uterine rupture and of its high mortality can be gained from the following statistics:

In a series of 20,000 consecutive deliveries at the Sloane Maternity Hospital there were thirty cases of ruptured uterus, *i.e.*, one in  $666 \frac{2}{3}$  deliveries. Of these thirty ruptures, fifteen occurred before the patient was brought to the hospital and fifteen after admission. Twenty-three were in multigravidæ, and seven in primigravidæ. Sixteen were of the complete and fourteen of the incomplete variety. Of these thirty ruptures, one occurred spontaneously. The maternal mortality was  $86 \frac{2}{3}$  per cent. The fetal mortality 80 per cent. Of the fifteen subjected to abdominal operation two recovered and thirteen died.

Of the twenty-three treated by gauze tamponade three recovered and twenty died.

Of these twenty-three cases fourteen were of the incomplete variety.

Of the twenty-six maternal deaths fifteen were due to shock and hemorrhage, nine from infection; two from eclampsia independent of the rupture.

Until practitioners realize that a uterus working too long against an unsurmountable obstacle, especially if that uterus is weakened by previous cicatrices, may spontaneously rupture and until they realize that a case with membranes ruptured, liquor amnii drained away and uterus contracted upon the child is unsuited for version, uterine rupture is likely to occur.

With the wider diffusion of knowledge concerning the etiology of uterine rupture, this accident is becoming less frequent. This may be seen from the fact that in the last 6,000 deliveries at the Sloane Maternity no case of uterine rupture has occurred either among those admitted as waiting women, or among those in whom delivery had been attempted before admission.

One cause of uterine rupture which seemed to me unique was presented by a patient brought to my hospital service by a well-known member of our profession. Her history was as follows: After a long tedious labor with little progress and with fetal heart showing evidences of weakening, her physician, a very able obstetrician, decided to deliver her with forceps. The administration of chloroform was intrusted to a monthly nurse who soon after the application of the forceps had the misfortune to spill a portion of the bottle of chloroform upon the face of the patient. She had received but little of the anesthetic by inhalation and now coming out of its influence and feeling the burning from the chloroform on her face and eyes she became almost frantic. With one kick (she was a powerful woman) she deposited her obstetrician on the other side of the room and in the next moment threw herself forceps and all against the wall beside her bed. Her next move was to raise herself and fall on the handles of the forceps. By this time her physician was by her side and slipped off the forceps. The head which was previously engaged was now found receded and freely movable, version was performed and the child easily extracted. It lived about two hours but seemed injured about the neck. Examination of the patient on admission to my service showed a rent through the anterior uterine wall extending from cervix to within about an inch of the fundus but not opening the peritoneal cavity, *i.e.*, an incomplete rupture. This rent and the sub-peritoneal space in front of it were packed with iodoform gauze and the patient recovered giving birth to another child two years later.

*Postpartum Injuries.*—The most important and most frequent postpartum uterine injuries are those associated with attempts to empty and cleanse the uterine cavity. This applies especially to cases in which the uterine contents or the uterine wall itself is more or less infected and this holds equally true whether the pregnancy has ended in abortion or in full-term labor. Of these injuries perforation will be first considered. If a clean

uterus recently pregnant is easily perforated just because its wall has been softened by the pregnancy, much more easily is a uterus perforated which has been both pregnant and infected.

Many of us have seen these infected uteri after removal, through which the curette or sponge holder could be passed with almost as much ease as through dough. Hence the importance in cleansing these septic uteri of secundines, blood clots, etc., of using the instrument which will do the least harm. This in the opinion of the writer is the sterilized finger wherever the dilatation of the cervix will allow of its introduction.

In cases where the cervical canal will not admit the finger or fingers, some substitute must be employed, such as the blunt firm curette, sponge holder, etc., and here with the same precautions as recommended when discussing the cleansing of the uterus after abortion, namely, counter-pressure upon the fundus; the very gentle introduction of the instrument, and limiting whatever force is employed to the outward stroke.

The injury to the postpartum septic uterus which is frequently inflicted and its importance too little recognized, is a traumatism opening up new avenues of infection in attempts to cleanse the uterine cavity. The impression that because a woman shows a rise of temperature a few days after her delivery, her uterus should be vigorously curetted and frequently douched has undoubtedly been the cause of many a death.

A single intrauterine douche carefully given by a competent man will occasionally, in the presence of septic material in the uterine cavity, so injure the wall of the uterus as to open a new avenue for absorption of toxins at least, as is shown by a rigor and marked rise of temperature within an hour or two following the douche. If by this procedure the uterus has been cleansed of septic material and the temperature after its rise falls to normal and remains so, the result is considered as justifying the means in spite of the penalty of a rigor and rise of temperature.

But if a single intrauterine douche will occasionally cause such a penalty, how about frequent intrauterine douching repeated every few hours as was formerly the custom with some?

If a single intrauterine douche will bring such a penalty, how about a vigorous curettage repeated daily for several days as I have known to be done by men who ought never to trust themselves with a curette in their hands? The greatest danger in the treatment of puerperal infection to-day is injury to the uterine wall destroying nature's barriers against the spread of infection

to the general system and opening new portals of entry for infection which but for instrumental interference might perhaps have remained localized. The intrauterine douche with proper indications is a procedure of greatest value. The writer would not know how to treat puerperal infection without it, but he believes that it should be used with the greatest gentleness, that it should not, as a rule be repeated oftener than once in twenty-four hours, and that it should be continued only so long as the return flow shows that there is débris within the uterine cavity needing to be washed away. A word about the curette. It too is a most useful instrument, one which in the absence of sufficient cervical dilatation to admit the finger is almost indispensable, but much depends upon the man behind it. It may save many patients. It has killed many.

The object sought in the treatment of puerperal infection with septic uterine contents is cleanliness of the uterine cavity with the least possible injury to the uterine wall in securing this result.

If you can be sure that the uterus is empty leave it alone.

If in doubt explore, but do it as gently as possible with sterile fingers as first choice and curette as second. If septic secundines are found within the uterus remove them as carefully as possible with finger or curette, but do not repeat the use of the curette. Use the intrauterine douche only so long as the return flow shows results.

10 WEST FIFTIETH STREET.

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## INJURIES TO THE UTERUS—NONPUERPERAL.

BY

H. C. COE, M. D.,

New York.

IN reviewing the somewhat extensive literature of this subject one is struck with the fact that little if any additional light has been thrown upon it during the past twenty years, at least as regards pathology and etiology. The prognosis has naturally been considerably modified since the advent of aseptic technic. Few writers, except Heineick (whose paper and accompanying bibliography is the most satisfactory of all that I have read), draw a sharp line between traumatic lesions of the puerperal, or gravid, and those of the nonpregnant uterus, such as we seek to do in the present discussion. The Paris theses on this topic (notably those by Richet and Mcquel) and most of the papers based on personal cases fail to make this important distinction.

The subject is a trite one and I doubt if I can add much of value to an audience of specialists. I recall distinctly when an interesting discussion, introduced by the late Dr. Mundé, was held before this Society nearly twenty-five years ago, and similar discussions will be found in the Trans. Am. Gyn. Soc., while every text-book on diseases of women deals with the subject to a greater or lesser degree.

I do not propose to burden you with quotations or references, but to summarize my personal experience, as a pathologist and surgeon, with traumatism of the nonpregnant uterus.

Anyone who has examined a fairly normal nulliparous uterus immediately after removal (not a postmortem specimen, or one softened from septic infection or other causes) will find it difficult to believe that the wall of such an organ could be perforated by a blunt instrument without the exercise of more force than would be employed by a sane operator. Yet such uteri have been perforated and by the most experienced gynecologists, as many personal confessions attest. It is not strange that under apparently normal conditions the operator to whom this accident occurs should seek to explain it by inferring the presence of a dilated tube, a bicornate uterus, or some change in the resistance of the uterine wall produced by relaxation under narcosis (the "Erschlaffung" which was discussed a good deal in German journals a few years ago). Since, with our present aseptic methods (as indeed before they were introduced), perforation of the wall of an aseptic uterus is not usually followed by ill results, doubtless many cases have not been recognized. I have seen a uterus, the fundus of which was clearly the site of a former laceration, as shown by the deep extensive cicatrix and surrounding adhesions. But, however impossible it may appear, it is a fact that a normal uterus may under certain conditions be perforated with a blunt instrument during operation, and that too with the use of no more than the ordinary force.

*Pathology.*—Certain changes in the musculature undoubtedly favor traumatism, such as fatty or hyaline degeneration (from endarteritis?), senile atrophy, tuberculosis and carcinoma, the presence of a benign neoplasm (sessile fibroid), relaxation under anesthesia (the uterus may increase in depth from 1 to 3 cm.), with thinning, or diminished resistance of the wall. Lastly, softening, or cicatrices following extension (lacerations of cervix), malposition and fixation by adhesions.

As regards dilatation of the proximal end of the tube, admitting

a probe, sound, or curette two or three inches, thus leading the operator to think that he had perforated the uterine wall, while this condition is confidently described by many writers, I am in accord with Sutton and Lawson Tait (as well as with the former's scepticism with regard to the emptying of a pus-tube into the uterus), that it must be an exceedingly rare condition. Like Sutton, I have never seen such a tube at the operating or autopsy table, and I confess that I could not demonstrate clinically the fact that I had entered a tube to the extent of several inches. What occurs in these cases, I believe, is that the uterine wall is actually perforated at the cornu, where it is thinner than at other points at the fundus. It is much more probable to infer the presence of a bicornate uterus, which I have discovered for the first time on opening the abdomen.

Spontaneous rupture, or traumatism, of the nonpregnant uterus must be rare indeed. The injury may be located: (a) in the portio; (b) lower uterine segment; (c) fundus.

It may be caused by: 1. Blunt instruments; (a) sounds (*not* probes); (b) curette; (b') douche tube; (c) dilator, single or branched; (d) curette-forceps; (e) during morcellation of fibroids; (f) tupelo tents. 2. Sharp instruments or scissors, foreign bodies used for criminal or other purposes (which have a medico-legal interest), also injuries during coitus, etc.

The traumatism may be: 1. Puncture or perforation: (a) simple; (b) attended with hemorrhage; (c) tearing of tissues, more or less extensive; (d) injury to rectum or bladder; (e) prolapse of intestine or omentum. Again the accident may occur in (a) the nonseptic or (b) the septic uterus.

The following abstracts of cases in my own practice serve to illustrate the possible injuries:

CASE I.—Multipara, lacerated perineum and prolapsed ovaries, recurrent appendicitis, uterus slightly anteflexed, depth three inches. Introduced a dilator with too sharp a curve and carried the handles too far backward, at the same time making traction downward on the anterior lip. Was aware by the penetrating of the point of the instrument that the anterior wall had probably been perforated. Confirmed by the introduction of a sound. No reaction or bleeding. Repaired pelvic floor, opened abdomen and found a small perforation just above the line of insertion of the bladder. Closed with a couple of catgut sutures. Ventrosuspension and shortening of ovarian ligaments, appendectomy. Afebrile recovery. In this instance the uterine wall appeared to be perfectly normal and I attributed the accident to too strong traction downward on the anterior wall, thus putting

it on the stretch, while the handle of the imperfect dilator was carried too far backward. Fortunately the blades were not opened, or there might have been extensive laceration, or injury to the bladder.

CASE II.—Perforation of cancerous uterus with a curette. In this case I made a diagnostic curetting for suspected cancer of the body of the uterus under ether. Sharp curette introduced between thumb and finger brought away a small bit of brain-like tissue. Introduced a second time, it perforated the fundus without any sense of resistance being felt. Verified by passage of sound. Vaginal hysterectomy performed at once was followed by afebrile recovery. Thinning of wall only at site of puncture where a small cancerous nodule was found. The patient lived three years after.

CASE III.—Inoperable cancer of body of uterus. Sound introduced lightly, turned forward. Immediate gush of urine; several ounces escaping through os externum. Retention catheter worn for two or three days, and wound healed quickly.

CASES IV to VIII.—Cervix split with ordinary Wathen's dilator up into broad ligament, on the left side, attended with moderate hemorrhage. Ordinary suture and no reaction. In one case laparotomy was done (diseased tubes and ovaries), and nothing was found but a small hematoma in left broad ligament.

CASE VIII.—(Consultation.) Deep bilateral laceration of the cervix on the left side. Uterine artery severed and intestine prolapsed. When I arrived I caught the artery in a clamp and drained through the tear in lower right segment. Afebrile recovery and patient out of bed in ten days.

I have seen other cases of injuries in hospital practice from sharp and blunt instruments, after enucleation and morcellation of intrauterine fibroids, etc. My experience has been confined entirely to aseptic cases. In 114 cases of perforation collected by Jakat, twenty-three terminated fatally from sepsis. He notes that in seventy-three the injury was produced by curettes, in nineteen by sounds, in sixteen by dilators, in six by catheters, and in fourteen by curette-forceps. The latter is a particularly dangerous instrument which I never use except to remove nonadherent tissue previously detached with the curette.

Sutton (*Clin. Journal*, Feb., 1908) affirms that whenever the cervix is dilated beyond No. 8 (Hegar's scale) actual laceration occurs, which may involve the entire thickness of the wall without being recognized. Subsequent irrigation with antiseptic fluids may cause a fatal result in a case in which the lesion would otherwise be harmless. The same writer calls attention to the danger of perforating the uterine wall while removing submucous

fibroids by morcellation—an accident with which we were unfortunately too familiar in the days when Thomas's spoon-saw was a favorite instrument for this purpose. How much easier and safer to bisect the anterior wall, remove the neoplasm, and suture the wound, as we do now!

Heinecke (*Surgery, Gyn. and Obstetrics*, vol. vii, 1908, p. 424) analyzes 160 cases, among which he notes only four of so-called "false perforation," in which the sound was supposed to enter a dilated Fallopian tube. Against this theory are: 1. The small lumen of the tube; 2. The fact that the tubes are normally transverse to the axis of the uterine canal.

De Bovis (*La Semaine Méd.*, vol. xxvi, 1906) reports three cases of supposed perforation in which no lesion was found on opening the abdomen, which he regards as an argument against Jarman's dictum (*Trans. Am. Gyn. Soc.*, vol. xxx, 1905) that the abdomen should be opened in every case. Without quoting further from the literature, it may be assumed that as a rule certain predisposing causes may be found in the majority of cases of accidental injury to the nonparturient uterus in the hands of the expert as summarized by Heinecke, viz., softening or hyperemia of the uterus, especially at or near the menstrual period, atrophy, senile, or due to chronic disease or former puerperal infection; absence of the mucosa and hyperplasia of connective tissue, hyaline or fatty degeneration and thrombosis, tuberculosis and malignant disease.

Dilatation and curettement should not be performed indiscriminately (*vide* writer's paper, "Curettement by the General Practitioner," *Med. Review of Reviews*, April, 1907), always under anesthesia, with proper instruments, and *never* in acute septic or gonorrheal endometritis. The position, mobility and consistence of the uterus should be carefully noted before hand, and the cervix should simply be steadied by bullet-forceps, *not* pulled downward. The curette is to be held lightly between the thumb and finger, not grasped with the whole hand and forcibly rotated, as is so often done. If a deep bilateral laceration of the cervix is present, with resulting tissue-changes, the dilator must be used with great care. It is not wise to introduce any instrument into the uterus in the office, but only at the operating-table under strict aseptic precautions.

If the injury is recognized at the time, further manipulation should be suspended, especially irrigation. Nothing is gained in any case by washing out the nonpuerperal, aseptic uterus,

even with sterile water. Recovery after simple perforation in aseptic cases is the rule and no treatment is indicated except rest and careful observation of the patient.

If the lesion is extensive, and is followed by profuse external bleeding, or evidences of internal hemorrhage, or by prolapse of omentum or gut, laparotomy should be performed without delay, also in cases in which septic infection is present or suspected.

Vaginal section is contraindicated in these cases, and above all hysterectomy, as it is impossible to determine the exact nature of the injury through the vaginal route and the uterus should be saved if practicable, pregnancy and normal labor having followed repair of the lesion in several instances.

After all, as Braun von Fernwald has aptly stated; "the dextrous operator may use any instrument; for him the art lies, *not* in the instrument, but in the hand."

8 WEST SEVENTY-SIXTH STREET.

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## THE RELATIONS OF THE GENERAL PRACTITIONER TO OBSTETRIC SURGERY.\*

BY

REUBEN PETERSON, M. D.,

Professor of Obstetrics and Gynecology, University of Michigan,  
Ann Arbor, Michigan.

THE present may be designated as the age of specialism in medicine. The human body has been divided and subdivided and the ills peculiar to its different parts have been carefully studied by men whose superior knowledge derived from such study has made them known as specialists. And the tendency has been to more and more subdivide and limit the field of the specialist. Time was when it was not considered derogatory to the surgical specialist to have a family practice as well. As much as his time permitted, he still attended to the general ailments of the members of his old families, who were loath to give him up for a new physician. Nowadays, and probably rightly, the surgeon is compelled by the sentiments of the laity and his colleagues to be a specialist in every sense of the word. Not only that, but the general surgeon is soon forced to specialize in his own specialty. Research work along, or peculiar success in certain lines of work, will deluge him with patients with certain

\*Read by invitation before the St. Joseph County Medical Society at South Bend, Indiana, November 30, 1909.

disorders until his time is largely taken up with this kind of work. And the same thing may be said of all the present-day specialties.

Now all this specialism has had its effect upon the general practitioner. If he be conscientious he wants his patient to receive the best possible advice, for above all he is seeking the cure of his patient. Yet, if he refers every patient for every ailment to the specialist he soon will have no patients or practice. It was well expressed by a long suffering general practitioner, when he said that he found himself in the position of an umpire or referee whose business it was to decide which specialist his patient was to employ, his only function between such refers being to occasionally throw in an anticonstipation pill. Yet in the midst of all this specialism has it ever occurred to you that there is one department of medicine quite free from specialism? Personally, I know of but one specialist in obstetrics; by that meaning a man who limits his work to midwifery cases. There are plenty of men who are specialists in obstetrics and gynecology, but even in the large cities there are few if any specialists in obstetrics alone. Now when we stop to think of this, is it not a rather anomalous condition of affairs? Why are there no obstetric specialists when the field is such a broad one, and when there are so many specialists along other lines? For a number of reasons, but two in particular. Among other reasons for specialism are the larger pecuniary returns for such work. This does not apply to obstetrics. Except among the wealthy, after all a small proportion of every community, it is next to impossible to be adequately compensated for obstetric work. If one does not believe this let him try it. To give the necessary care to the pregnant woman, to carry her through her labor and puerperium certainly entails as much knowledge, skill, and labor as to remove the appendix or hypertrophied turbinates. Yet the charge for the one is all out of proportion to what the public willingly pay for the other. This probably is the fault of the profession, for they have been teaching the public for many years that child-birth is a perfectly physiologic act, and that every woman is destined to get through her pregnancy and confinement without mishap. Why then, naturally asks the public, should the charges for obstetric work be anything but low. As a consequence they resent any special charge for such work. Hence such a field holds out but few inducements to the specialist, if to inadequate compensation the long hours and

night work be added. Secondly, the general practitioner has always striven to retain his obstetric practice. He refers anything from an enlarged tonsil to cancer of the stomach to the proper specialist, but when it comes to confinement cases he draws the line. That is his peculiar province and has been for centuries and he proposes that it shall be his forever. When he is independent or worn out by long service he may give up some of his obstetric work, but this is practically giving notice that he is going to specialize or retire from practice, for he knows, as his competitor knows, that the doctor who brings the baby into the world and administers to the mother in her convalescence, will be the family physician in the large majority of cases. How often one hears the statement and how true it is: "I do not like obstetrics, I hate the night work but I have to do it, for if I gave it up I would lose my families."

So for these reasons and some others, the general practitioner is and always will be the obstetrician of the country. And being the obstetrician is it any wonder that he desires to do the surgery connected with his midwifery cases, in fact insists upon doing it? Are there any reasons why he should not do it, and do it well, if he be properly trained and studies his cases as he should? An answer to these questions brings us to a consideration of the relation of the general practitioner to obstetric surgery.

Now the writer has been rather vehemently criticized in some quarters for his advice to general practitioners to substitute vaginal Cesarean section for manual dilatation where the cervix is hard and rigid and delivery has to be accomplished quickly. It has been claimed that such an operation demanded special skill on the part of the operator in order to avoid injury to the bladder or rectum, consequently such operations should be reserved for specialists. My reply has always been, that if this be true, vaginal Cesarean section is of very little use in obstetrics, for the value of an obstetric operation must depend, after all, upon whether it can be performed by the general practitioner, for he has a hundred cases of confinement to the specialist's one. And the practitioner has proved his ability to successfully perform difficult obstetric operations, specialist's opinions to the contrary. The same objections have always been raised to new operations in obstetrics. The application of forceps, version, manual dilatation, symphysiotomy, abdominal Cesarean section, and finally vaginal Cesarean; all of these, at one time or the other, the practitioner has been warned against

attempting, for fear he has not the necessary skill. Yet I notice that the warning comes from men who hold themselves a little above the average as regards their operative skill. However, they forget that taken as a class there is nothing in their mental makeup which warrants their high opinion of themselves. The human brain is of about the same caliber when everything is taken into consideration. Intelligence, industry and opportunity are all that are necessary to make one proficient in any line of work. Why then should not the general practitioner possessing these perform any and all the necessary obstetric operations and do them well? There is absolutely no reason. And for the benefit of those who shake their heads and cite the bad obstetric surgery they have seen performed by general practitioners, it may be said that just as bad surgery has been performed by those who consider themselves in a different class. Whatever may be said, the general practitioner is going to perform his own obstetric surgery, no matter where he may reside, no matter how easy it may be to summon the specialist. He may not think himself competent to remove gall-stones or do a hysterectomy, but he feels no hesitancy about the application of high forceps, a much more intricate and complicated operation. Somehow he feels ashamed to summon another to perform such operations for him. A long line of physicians before him have done the best they could with these operations, so why should he have faint heart and be a quitter?

To my mind, the American physician is naturally a skillful and successful surgeon. I mean that, as a rule, he is quick to see, thinks for himself, and above all is resourceful and able to work himself out of a tight place. More than once I have been amazed to hear my former students relate their difficulties in obstetric practice and learn of the success which has attended their efforts to solve problems not infrequently presented for the first time. I venture to state that from the operative standpoint alone, the most brilliant obstetric surgery is to be found in the country districts, where the doctor, alone with his patient except for the other members of the family, administers chloroform and by the aid of an oil lamp performs operations which, from the standpoint of skill, would compare very favorably with those performed in college amphitheaters. All this shows what can be done and will be done as long as the physician ministers to women in their hour of need.

Yet while we sympathize with the general practitioner in his

endeavors to retain one field of surgery for himself, it cannot be gainsaid that there is vast room for improvement in obstetric surgery as it is practised to-day. If we concede to the general practitioner the right to this province, we have the same right to demand that in a way he shall be a specialist in this department. It is not even sufficient that he acquire and put into practice a high degree of operative skill. Like any other surgeon he is supposed to possess this or else he is not fit to practice his art. But the general surgeon, the special surgeon, the obstetric surgeon should be no mere cutter or manipulator. Above all, he should be a good diagnostician and have an intimate knowledge of the indications for or against an operative procedure. The obstetric surgeon, or he who is prepared to perform any and every obstetric operation, should realize that it is a greater achievement to do away with the necessity for such operations through efficient prophylactic treatment. To do this necessitates constant supervision of the patient during gestation. There can be no escape from this conclusion. If the general practitioner demands as his right the performance of manual dilatation or vaginal Cesarean section for eclampsia, it is no less obligatory upon him to watch over the woman during gestation, and prevent this complication, if that be possible. Yet that is just what the practitioner often fails to do. In many cases he does not see his patient until he is summoned after the onset of labor. If this be the common practice among his patients, it shows that he has been careless and has not properly educated them regarding the dangers of pregnancy. After the onset of the convulsions, an operation, no matter how skillfully performed, may not be able to make up for his previous neglect. Failure to perfect himself in pelvimetry may mean that he is unaware of the existence of a contracted pelvis, with the result that his operation after a protracted labor will probably result in a dead child and possibly serious injury to the mother. Yet how many general practitioners attempt to measure a pelvis or even possess a pelvimeter? Still, if they claim the right to operate, it should be obligatory upon them to own this instrument and be able to use it. How many make it a practice to accurately map out the position of the child during the latter part of pregnancy or at the beginning of labor? If they are not able to make a diagnosis from palpation whose fault is it? They certainly have had the clinical material. If they have failed to utilize it to the best advantage, is it any one's fault but their own?

Have they worked over and perfected a technic efficient for operations in private houses or is the asepsis wanting and is the patient thereby endangered? Have they worked out all these details beforehand, so that when they are summoned to the labor there is no confusion and everything is in readiness in case an operation becomes necessary? Is it not true that often such technic is entirely wanting? In many cases a little boiled water and a few bichloride tablets are all that are employed even when major operations are performed. Why should obstetric surgery be more slovenly performed than any other kind of surgery? Yet it cannot be denied that this is true. It cannot be claimed that such surgery requires little or no aseptic precautions, for it is well known that in the puerperal uterus we have ideal conditions for the development of sepsis. Then what right has a practitioner to perform a difficult forceps operation with the patient crosswise of the bed, where no attempts have been made to cleanse the vulva or see that everything which is liable to come in contact with the operator's hand is aseptic? The same man, perhaps, would take the most elaborate aseptic precautions were he to repair a lacerated cervix, yet the danger in the puerperal case is many times greater. What right has an obstetric surgeon to perform difficult operations with no assistants except those he may be able to pick up about the house? Occasionally, in isolated districts, he may be unable to summon help, but surely these are exceptional cases, and to be regretted, for it is next to impossible under such conditions to maintain an efficient aseptic technic. Certainly to do dangerous operations alone, where aid can be secured and then boast about it because the patient does not die is only an illustration of the low plane of present-day obstetric surgery.

No, let the general practitioner cling to his heritage if he will and do all the obstetric surgery his practice necessitates, but let him have a just appreciation of his responsibilities in this matter. Let him realize that faults of omission are just as reprehensible as faults of commission, and let him make of himself the kind of obstetric surgeon he would call in for one of his own family.

Now, how is this reformation going to be brought about? The oldest offenders probably will never change. Habits of cleanliness and mastery of efficient technic are not learned late in life. The practitioner over forty with slovenly habits will carry them with him to his grave, in the meantime hastening many a poor woman toward hers. No, the only hope lies in a

better education in obstetric matters for our young men. Let the teacher of obstetrics redouble his efforts to see that an aseptic technic or surgical cleanliness is so thoroughly drilled into his students that it will be second nature to them when they are graduated. Some of these practitioners will be backsliders and will become dirty, shiftless and careless obstetricians and operators, but not many, if the instruction has been thorough. Let the undergraduates be taught on the manikin the various obstetric operations until they are thoroughly familiar with them. Let it be preached to them that obstetric surgery calls for as much careful planning as an abdominal operation, and that far from its being a cause for shame to summon assistance when an obstetric operation becomes necessary, it is almost criminal not to except in cases of emergency. Let them, filled with such teaching, go forth as practical missionaries illustrating by their own deeds what well-trained obstetricians are able to do. In some such way as this, slowly perhaps but none the less surely, will a higher conception of the dignity of obstetric surgery be entertained by the profession, and then and not till then will such surgery come into its own.

620 FOREST AVENUE.

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## THE MENOPAUSE.\*

### AN ANALYSIS OF TWO HUNDRED CASES.

BY

C. C. NORRIS, M D.,

Instructor in Gynecology, University of Pennsylvania; Attending Physician, Maternity Hospital; Assistant Obstetrician and Gynecologist, Philadelphia Hospital.

(With three charts.)

It is now generally accepted that menstruation is dependent upon an ovarian secretion. Whether this secretion is derived from the lutean cells, from the Graafian follicle, or from some other portion of the ovary, is still somewhat in doubt. Clinically, this fact, as proven by the artificial menopause which is produced by a double oophorectomy, is too well known to need comment. Furthermore, animal experimentation and histological studies tend to prove that the uterus is simply the active agent in menstruation and that the primary factor is the ovary. The recent studies of the endometrium by Adler and Hitschmann and our own work prove beyond question that menstruation is

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nothing more than a preparation of the uterus for pregnancy and that menstruation might well be described as an abortion of an unfertilized ovum. The ambiguous but tersely expressed view of Power's, "That women menstruate because they do not conceive" can now be readily understood. We know from a study of animals that ovulation is synchronous with menstruation in most species, also from the studies of Leopold and Mironoff, and others, that menstruation and ovulation are synchronous in about 72 per cent. of cases among women. Doubtless this difference between ovulation and menstruation which occurs in 28 per cent. of cases, can be explained on the ground of civilization and unhygienic methods of living for many generations. Be that as it may, women cannot menstruate who do not ovulate.

With these facts before us, that menstruation is positively dependent upon some metabolic activity of the ovaries, it seems fair to assume that the menopause is caused by a lack of this activity or secretion, and this assertion is further strengthened by the histological study of the ovaries removed from women past the menopause. A brief review of these studies is necessary to make plain certain facts as to the actual cause of the onset of the menopause and why multiparæ have a longer menstrual life than the nulliparous women. Practically, we may state that a Graafian follicle is ruptured for each menstrual period. Whether this occurs at or immediately before the period, or at some intercurrent time, is of no consequence as far as these studies are concerned. The follicle is succeeded by a corpus luteum which, if pregnancy does not take place, soon undergoes a process of healing, similar to the healing by granulation of any other aseptic wound. This stage is followed by the corpus albicans which is nothing more or less than scar tissue. This further shrinks and finally results in a small wavy, eosin-staining particle, known as the "snake-like body." These are found scattered throughout the oophoron, but more numerous toward the periphery where the follicles have ruptured. Here they may be seen by the naked eye or with a magnifying glass as small pits or depressions on the surface of the ovary. These pits do not by any means represent the actual amount of scar tissue, the greater part of which is more or less deeply imbedded in the ovary. The ovary has a central circulation and the constant pulsating of the markedly branched and spoke-like arteries tends to push the scar tissue

toward the surface as it does the primordial follicle which is ultimately destined to become a Graafian follicle. For this reason, as time goes on, even those snake-like bodies which are deeply placed in the substance of the oophoron are driven toward the periphery, thus forming, eventually, a dense imperforable scar-like covering over the entire ovary, and in this way ultimately preventing the further rupture of follicles. The ovary thus encapsulated cannot give off ova and the menopause is the result.

Not only is the menopause produced by the scar<sup>e</sup> tissue on the surface, but that cicatric tissue which is present in the deeper parts of the ovary contracts and in this way diminishes the blood supply of the organ and an atrophy of the ovary results. One has only to compare the small shriveled senile ovary with the organ from a young woman to be convinced of this fact. In the one the tunica albuginea is comparatively smooth and thin. Section of the organ will further demonstrate this, while the surface of the other is covered by small depressions each of which is indicative of a definite amount of scar tissue, and when we remember the contractile power of scar tissue in other parts of the body, the smaller size of the ovary from the patient past the menopause can readily be understood. The great contractile power of cicatricial tissue is well demonstrated in the contractures caused by burns. Burns heal by a process of granulation as do corpora lutea. The woman does not fail to ovulate because the stock of primordial follicles is exhausted, but because of the scar tissue which prevents them maturing.

The average age of the onset of menstruation in this country as given by Engelmann, is fourteen; according to my own statistics, the establishment of the menopause does not take place until forty-seven, which, in the nullipara would account for the rupture of about four hundred and twenty-eight Graafian follicles, approximately two hundred small areas of scar tissue on the surface of each ovary. It would seem from these facts that the multipara should menstruate later than the nullipara, and this has been the case in my series of cases. It may be argued that the corpus luteum of pregnancy is larger than the usual corpus luteum and would thus produce more scar tissue, and this is true; but it is very improbable if it forms ten times the amount, which would be the quantity necessary to equal the amount produced, provided pregnancy had not occurred. Furthermore, histological studies of ovaries from multiparæ

fail to show any larger snake-like bodies than are found in the ovaries of the nullipara.

THE AGE AT WHICH THE MENOPAUSE IS ESTABLISHED IN THIS  
COUNTRY.

In the older text-books we find many mistakes regarding the menopause. One of the most frequent and misleading is that the menopause occurs between forty-two and forty-four years of age. This statement has been copied from one text-book to another until now there is a more or less general belief that this is the age at which to expect the so-called change of life. My conclusions have been drawn from two hundred cases. This number is too small upon which to base accurate estimates, but it would seem sufficient to prove that among normal women the menopause occurs considerably later than generally believed. The data for these statistics has been collected during the past five years and has been drawn from my own practice, from the Gynecological Dispensary at the Howard Hospital and from the Gynecological Service at the University of Pennsylvania, and has thus included patients from many degrees of social life. The statistics refer only to white women. Care has also been observed to use data only from such patients as were intelligent enough to give accurate and truthful histories. My endeavor has been to collect data only from those women whose general health was normal at the onset of the menopause and to exclude all those cases which were suffering from any general or local conditions which could in themselves account for hemorrhage from the uterus. Thus all patients suffering from arteriosclerosis, heart, lung, kidney, liver or splenic diseases or who gave a history of hemophilia have been rejected. All of the patients have been subjected to a gynecological examination and only those free from any local conditions which would be likely to produce hemorrhage have been accepted. A certain proportion of the statistics are derived from patients in whom lacerations of the cervix have been present. None, however, have been admitted in which hypertrophy of the cervix or any severe degree of eversion was present; likewise patients with a moderate degree of relaxation of the pelvic floor have been utilized. In none of the patients were the degrees of laceration either of the cervix or the perineum severe, nor were any of them suffering from symptoms derived from such conditions at the time of examination. It is obviously difficult to obtain such statistics,

the fact that these patients consult a physician rules out the average case. This accounts for the small number of cases from which the statistics are formulated. Of the two hundred cases, the patients ceased to menstruate at the ages indicated by the following chart:

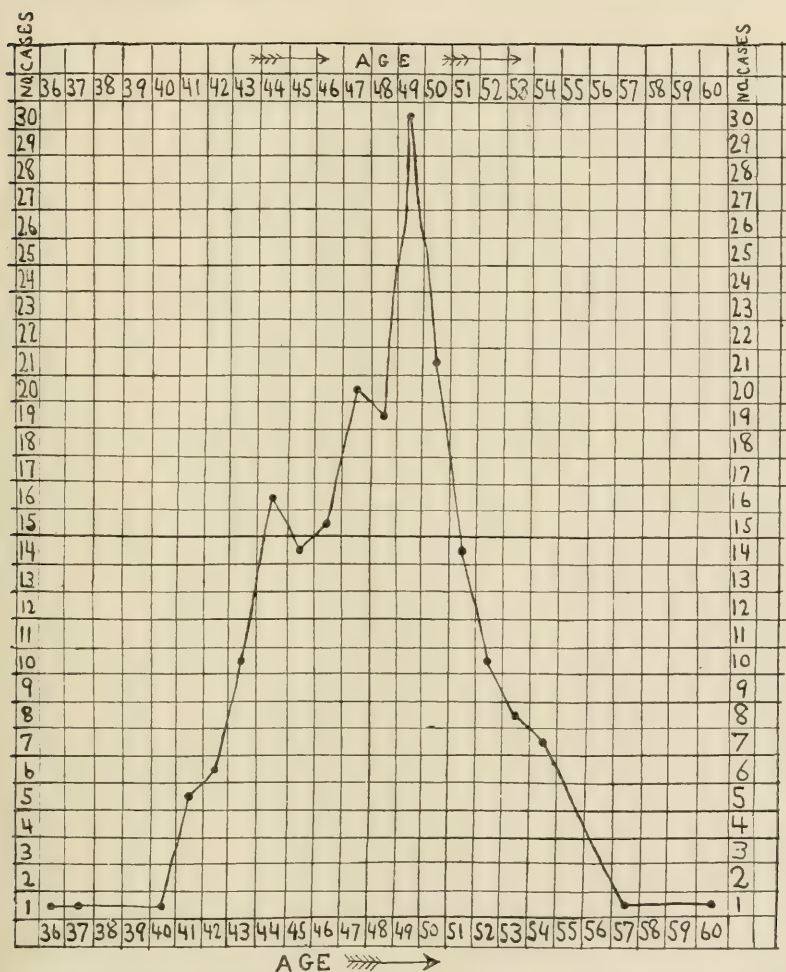


CHART I. Showing the age at which the menopause was established in two hundred healthy women.

A study of this chart reveals some striking facts. The average age at which the menopause occurred was 47.89 years instead of forty-two to forty-four as usually supposed. In one hundred and thirty-one cases or 65.5 per cent. the menopause did not

take place until forty-seven years of age or later; in ninety cases or 45 per cent. the menopause occurred between forty-seven and fifty years inclusive. In only eight cases did the menopause appear before forty-two, while in only two cases was it later than fifty-four years. This chart proves conclusively that the age at which the menopause can be expected

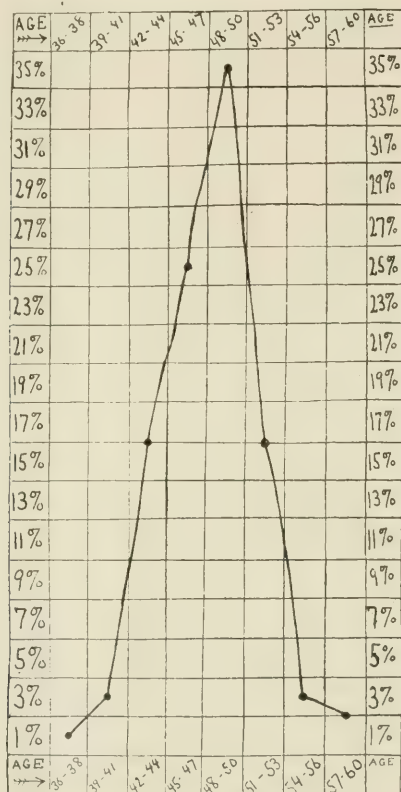


CHART. II. Showing time of menopause expressed in percentage and age groups.

is quite a variable one. A definite rule may, however, be laid down to the effect that the menopause occurring before forty-one and later than fifty-four is sufficiently unusual—2.5 per cent. in my cases—to, in itself, make it advisable that a thorough search be instigated for some pathological lesion to account for the onset or the delay in the onset.

The age at which the menopause was supposed to have taken

place in each of the above cases was dated from the last bleeding and not from the onset of the menopause as instanced by the first irregularity or diminution in flow.

The chief feature of this chart is its regularity. It will be noticed that the highest point is reached between forty-eight and fifty years of age.

INFLUENCE OF CHILD-BEARING ON THE AGE AT WHICH THE  
MENOPAUSE IS ESTABLISHED.

Of the two hundred cases forming the basis for the study in this paper, one-hundred and thirty-six were married at the time of the menopause; thirty were widows at the time of the menopause; thirty-four were spinsters at the time of the menopause.

The average age at which the menopause appeared among the married women was 48.99 years; among widows, 47.75 years, and 46.93 years among the spinsters. These figures bear out the theory of the onset of the menopause on the anatomical basis. For if we accept that the atrophy of the ovary and the consequent disappearance of the ovarian secretion is due to cicatricial tissue in the ovary, more of this tissue would necessarily be present in the ovaries of nulliparæ than in those of multiparæ. In this series of cases, the pregnancies varied from one to fourteen, the average being 1.9 children. This would allow a period of cessation from follicle bearing of from ten months to 11.8 years or an average period of nineteen months for each multipara, the time actually being somewhat greater than this as miscarriages and abortions have not been taken into account.

It has seemed best, owing to the small number of patients forming the basis for the statistics of this paper and because as a necessity the smaller group statistics are certain to be more or less inaccurate, to omit the statistics referring to the number of miscarriages and sterile marriages which have been present.

From the above figures it seems to be pretty definitely proven that among married women the menopause occurs later than among spinsters. Exactly how much or if any of the prolongation of the menstrual life is the result of the actual marital relations is difficult to state without having access to more extensive statistics than these. It would seem, however, that this plays a very definite part in prolonging the menstrual function. It is well known among horsemen that a mare will conceive regularly until an advanced age if she be bred every year, but if as she

grows old a year is missed she will become sterile. As has already been stated, these statistics have been derived, for the most part, from patients living in or near Philadelphia and the various sources from which they have come—American, German, Italian, Russian, etc., some immigrants and some native born—has made it impossible to form any estimate as to the bearing of race on the age at which the menopause appears. It seems probable, however, that in this climate it plays but a small part and that the social status and the general nutrition of the patients is far more important. Englemann has found that the age of the onset of menstruation is earlier among well educated, gently nurtured girls while among farmer girls and others who earn their living by hard work, the age of the onset of menstruation is later. It would also appear that those patients living in cities menstruate earlier than those in the country. These factors undoubtedly play a decided part in the age of the onset of the menopause.

An earnest endeavor has been made to study the relationship between the age of the onset of menstruation to the onset of the menopause, and, although theoretically, those patients in whom the age of the onset of menstruation is late should have a late menopause and *vice versa*; this fact has not been confirmed by my cases. Among the sixty-two patients in whom the menopause occurred latest, the average age of the onset of menstruation was 13.9 while among the fifty-four patients in whom the menopause appeared earliest, the average age of the onset of menstruation was fourteen. This should not be construed into a statement that in various climates and in other countries, the age of the onset of the menopause does not differ, for under these conditions race undoubtedly bears a very definite relation to the age of the onset of menstruation. Heredity seems to enter very decidedly into the age at which the menopause appears, as in one group of my cases two sisters each menstruated regularly until fifty-two and fifty-three respectively, while the mother was said to have menstruated until fifty-five. I have been told of another family comprising five women in all of whom the menopause appeared between thirty and thirty-five years of age. An interesting feature which is brought up by the study of the menopause is that in many cases, especially among those in whom the menopause appears unusually early, the sexual appetite is in no way diminished and in some cases even seems augmented after the final cessation of uterine bleeding, lasting in some cases

a year or two, or even longer after the establishment of the menopause.

The menopause is generally defined as the interval between the first irregularity of the normal menstrual period to the entire cessation of all uterine bleeding. This, as the following chart indicates, is a very definite period.

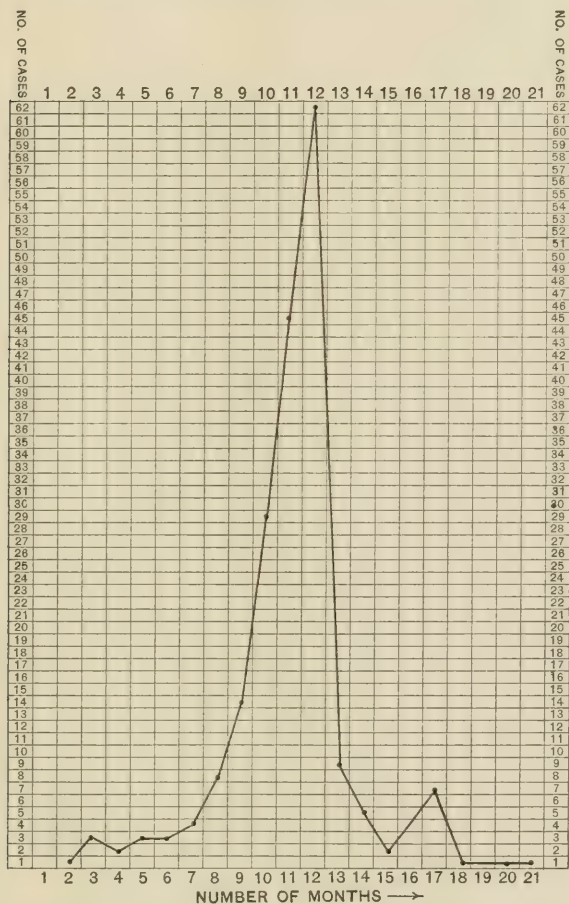


CHART III. Showing duration of menopause in months.

The average duration of the menopause was 11.46 months. An interesting feature brought out by this chart is that among such a large proportion of the cases, 68 per cent., the menopause lasted between ten and twelve months and that in but 5 per cent. of the cases did the menopause last more than sixteen months. The drop between sixty-two cases in which the menopause lasted

twelve months and nine cases in which the duration was thirteen months is most noticeable, and can only be accounted for by a coincidence and perhaps because a patient is more apt to remember a period as one year than as thirteen months.

The clinical lesson to be learned from this chart would seem to be that the menopause lasting more than one year is unusual, and that if this period be extended to fourteen months is so rare among normal women that a thorough physical and pelvic examination is indicated.

#### TYPE OF THE MENOPAUSE.

(a) Sudden or almost immediate cessation of the flow, the entire menopause lasting two or three months.

(b) Gradual but slow cessation of menstruation.

(c) Marked irregularities but becoming progressively less.

(d) Prolonged irregularities lasting over a period of more than eighteen months.

The first type is extremely rare and occurs in but 2 per cent. of my cases. A combination of the second and third types is by far the more frequent, being present in over 95 per cent. of the cases. The usual history is of a gradual cessation for three to six months followed by irregularities lasting over a like period. The menopause is normally established without an increased loss of blood; as the period of actual cessation of the menopause approaches, the flow is less in amount and the time occupied by the flow is decreased. After the first month or two of the onset of the menopause, the menstrual blood becomes thinner, it decomposes rapidly and, unless great care is exercised by the patient, gives rise to a peculiar, stale, sour odor. The number of patients in whom the menopause extends over a period lasting more than eighteen months is extremely small, 1.5 per cent. in my series.

Although a literal translation of the word menopause means a cessation of menstruation (*μῆνες*, menses; *παύσις*, cessation), the actual bleeding in the normal woman is but a very secondary consideration; as has been pointed out in menstruation, the uterus is simply the active agent, the chief factor being the metabolic activity of the ovaries, so at the menopause the important feature is the entire changes in the nervous system of the patient. At this time various neuroses may become manifest. A wide variation in the variety and degree of the symptoms depending upon the temperament and general con-

dition of the patient may be present. These symptoms frequently antedate any disturbance in the menstrual function and may persist for six to eighteen months after the final cessation of bleeding. It is almost impossible to obtain accurate statistics as to the duration of this class of symptoms, and in this paper when the word menopause is used it refers to the cessation of uterine bleeding. Although the neuroses are not infrequently the most distressing symptoms from which the patient suffers, the actual bleeding may be regarded as the barometer of health for if a general disease become aggravated or a malignant neoplasm makes its appearance in the uterus the presence of such a lesion is usually at once indicated by an increase or irregularity in the flow.

The frequency of carcinoma of the uterus is well known. The fact that the earliest and most frequent symptom of carcinoma of the uterus is irregular bleeding at or near the menopause is also well recognized together with the necessity of early diagnosis. The sum and substance of the study of the menopause from a practical standpoint is to, if possible, define what constitutes a normal menopause; what constitutes excessive hemorrhage, and what constitutes suspicious hemorrhage, and can the symptoms of the normal menopause be differentiated from those of early malignant disease.

We know that in the cases of early cancer, the only cases in which a hope of cure can be offered, hemorrhage is the chief if not the only symptom. It is easy to state that the typical hemorrhage of cervical cancer is the spotting, or the slight flow of blood following trauma. There is no doubt as to the treatment of cases giving this symptom, but in a very definite proportion of cases this symptom cannot be obtained and in the majority of cases of cancer of the body of the uterus no such history is present. We know that a very decided proportion of normal women give a history of irregular bleeding at the menopause. What then shall be the treatment of these cases? Shall all women who give a history of irregular bleeding at the menopause be subjected to a gynecological examination? From a study of this series of cases certain definite bounds can be laid down as to what constitutes a normal and what constitutes an abnormal menopause.

1. A menopause which has lasted over twelve months should be viewed with suspicion, and a gynecological examination in the case of a multipara is, in the author's opinion, indicated.

By far the greater proportion of these cases will be found normal. In 13 per cent. of my cases, the menopause lasted over twelve months. But it should be born in mind that these statistics refer to normal women only. Among the general run of cases the per cent. would probably be at least doubled.

2. Any menopause which has lasted over fourteen months in either a multipara or nullipara is such a rare occurrence, 8 per cent. in my cases, that a gynecological examination is indicated.

3. Any increase in the amount of blood lost is indicative of a pathological lesion and does not ordinarily occur during the normal menopause.

4. The menopause is a period in which pathological lesions are extremely likely to make their appearance; and this, together with the nervous phenomena which are so frequent, make it extremely desirable that all women should at this time be under the observations of a physician.

#### CONCLUSIONS.

1. That menstruation being dependent upon an ovarian secretion, it is fair to assume that the menopause is due to a change in the ovary. That this theory is born out by clinical facts, histological studies and animal experimentations.

2. That the generally accepted statement that the menopause is established at forty-two to forty-five is incorrect, and that forty-six to forty-nine is nearer the actual age in the Eastern United States.

3. That among normal women the age at which the menopause appears varies within wide limits, being influenced by many factors.

4. That the following conditions prolong the menstrual functions: child-bearing, marital relations, good nutrition and hygiene, city life, and education, while converse conditions tend to an earlier menopause.

5. That climate and race undoubtedly play a definite part in the age at which the menopause occurs but are probably of a secondary importance in the United States.

6. That hereditary influence is in many cases a potent factor, in some families the menopause occurs early, in others late.

7. That in the majority of cases, the chief feature of the menopause is not the cessation or diminution of bleeding but the neuroses. These frequently antedate any change in the men-

struation and may continue for six to eighteen months after the final cessation of bleeding.

8. That the actual bleeding is, however, the barometer of health.

9. That, normally, the menopause is established without an increased loss of blood. When menorrhagia occurs an examination is indicated. Metrorrhagia should *always* be viewed with suspicion.

10. That in about 90 per cent. of absolutely healthy women the menopause occurs normally, but that among average women fully 30 per cent. present symptoms which call for a careful physical and gynecological examination.

11. All women at the menopause should be under the observation of a physician. Care of the cases at this time will result in the menopause being established with less discomfort to the patient, and many malignant neoplasms of the uterus will be diagnosed earlier than would otherwise have been the case.

#### BIBLIOGRAPHY.

1. Hitschmann and Adler. *Monat. Geb. u. Gyn.*, 1, xxii., 1908.
  2. Leopold and Mironoff. *Arch. Gyn.*, xlv., 506-538, 1894.
  3. Engelmann, G. J. *Am. Gynecology*, 2, 238, 1903.
- 1503 LOCUST STREET.

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## THE FORCEPS OPERATION.

WITH REPORT OF METHODS AND AN IMPROVED INSTRUMENT.

BY

ELLICE McDONALD, M. D.,

New York City.

(With fifteen illustrations.)

IMPROPER knowledge and teaching of the technic of the forceps operation in obstetrics is due mainly to the lack of opportunity for demonstration of the operation to the students in their course. The operation is one which is more or less of an emergency operation, and is done most frequently outside of the hospital and under circumstances when it is difficult to dwell upon the procedure of the operation and to properly analyze the steps of its execution. When students attend obstetrical hospitals they see a few forceps operations and those mainly done in the operating room of the hospital where circumstances are much different and the procedure more complicated than

when the operation is done in a house. In the hospital, conditions are abnormal; a metal operating table is at hand with iron leg-holders, a large sterilized outfit is convenient, and there are assistants and nurses who obscure to the student the simplicity of the operation.

Hospital conditions are by no means the most advantageous for the forceps operation. A metal operating table with iron stirrups is about the worst possible position in which to place the patient for the forceps operation in so far as the operator is concerned. The reason for this is that the stirrups hold the feet in the way of the operator, the buttocks do not project to the end of the table, the patient slips down easily when tractions are made, and the table itself is as a rule too high for convenient execution of the maneuver. The table, being usually on castors, moves with the tractions. It would seem wise that in hospitals conditions of the private house, particularly those of the better class, should be copied in the operating room in order that the student should learn to cope with the conditions which he will most probably meet in practice, and learn the technic of the operation under these circumstances. This can be done without a loss of aseptic technic and with a gain of success in the performance of the operation, as no table is better on which to do the forceps operation than the ordinary kitchen table with a blanket added, and covered with a sterile cloth and a Kelly pad; and no position of the patient is better for the execution of the operation than that with the Robb leg-holders which hold the legs well up in position and allow the buttocks to project over the edge of the table. For these reasons, it has been thought useful to incorporate some of the modifications and simplifications of forceps technic into a compact article by which the practitioner may be able to obtain a correct view of the simplicity and ease of doing the forceps operation with perfect asepsis and no evil results to the patient or her child. The operation, as taught in the various text-books, lacks definite detail and uniformity of execution.

*Indications for the Operation.*—A common indication for forceps is delay of advance of the head over a certain period of time; as, for example, two hours delay when the head is above the perineum and one hour when the head is upon the perineum. This is, of course, modified to some extent by the condition of the mother and child, but as an arbitrary rule, and inexact as most arbitrary rules are, it is a pretty fair one. However, with

more experience in the care of labor, and a power of estimation or prognosis of the proper duration of that particular labor, forceps may often be applied when such time has not elapsed after the delay in the advance of the fetal head; forceps may be even correctly indicated when the head does not advance for a shorter time than that mentioned and *with failing pains*. And so considerable time may sometimes be gained in the total progress of the labor; thus, if the head rests upon the rigid perineum and if good pains are beginning to diminish and weaker ones result, it is often advisable to apply forceps sooner than when they are advised in the text-books. This is, however, a matter of the personal capability of estimating the probable duration of the labor and the power of expulsive force.

*Preparation for the Operation.*—The requisites of a good forceps operation in a house are an ordinary kitchen table padded with a blanket and covered with a sheet, a Kelly pad, a pail, a chair, and a footstool.

The proper dressing of the patient is a matter of some importance in the maintenance of rigid asepsis. The necessities are a number of sterile towels, some adhesive plaster, and a strong elastic band. In addition, if the obstetrical bag provides a pair of leggings or cotton stockings, these are of some advantage. These cotton leggings are best made in the form of simple oblong open-ended bags 15 inches wide and 36 inches long. These bags are more convenient than those leggings which are shaped with feet, as they may be pulled on in any way and cover everything as well as the more elaborate ones. At the upper end, the seam should be left open for 15 inches, so that the ends may project over the abdomen.

Another useful aid to insure asepsis and to prevent contamination by discharges from the rectum is the use of a strong elastic band which passes across over one buttock to the other and is attached to two ordinary harness clips such as are used upon driving reins and which hold the towel in position below the vagina and above the anus. These snaps are held in position by two long pieces of adhesive plaster which pass around the thigh and which may be applied while the patient is in bed and before she is placed upon the table. The large rubber band is boiled with the forceps and may be readily placed in position by the nurse or attendant while the towel is held in front of the field of operation, and allowed to fall over after the band is attached. This can be done after the vulva and vagina have

been washed, and can readily be done without contamination of the towel. Instead of the towel a large piece of sterilized rubber dam or sheeting may be used and is very convenient for this purpose.

This elastic band has certain definite advantages over the common method of passing the bits of adhesive plaster across the buttocks to hold the towel in this position. When the adhesive plaster strip alone is used it must be applied after the patient is in position, on the table, which in itself is a matter

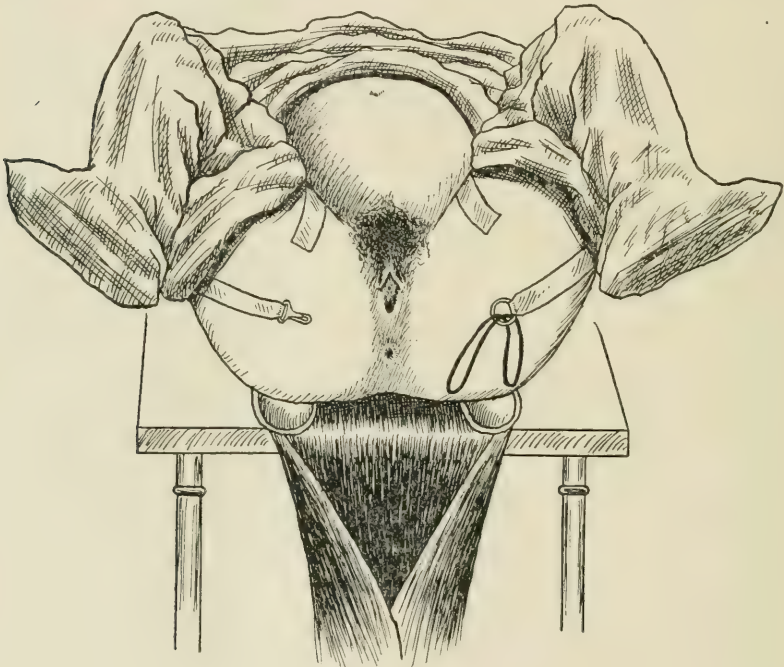


FIG. 1.

of a little difficulty, and which being done by the nurse or attendant unaccustomed to it, under the direction of the operator, is seldom done well. And also when the tractions are made and the perineum bulges with the descending head, the adhesive plaster is torn away from the perineum and from its attachments so that a cup is formed between the buttocks and perineum and the towel which collects the discharges is a source of inconvenience and may be a point of infection. With the elastic band, however, the towel is kept approximated to the perineum, all discharges flow over its surface, and, should it

become soiled or soaked, the towel may be grasped and pulled away from the buttocks and a clean one dropped inside and held in position equally well, so that there is no fear of infection. The method of applying these towels may best be seen from the illustrations 1 to 5.

In the placing of the other towels it is well to put two side towels in position before the upper or top towel. In this way they do not slip down as they are held from doing so by the towel on top.

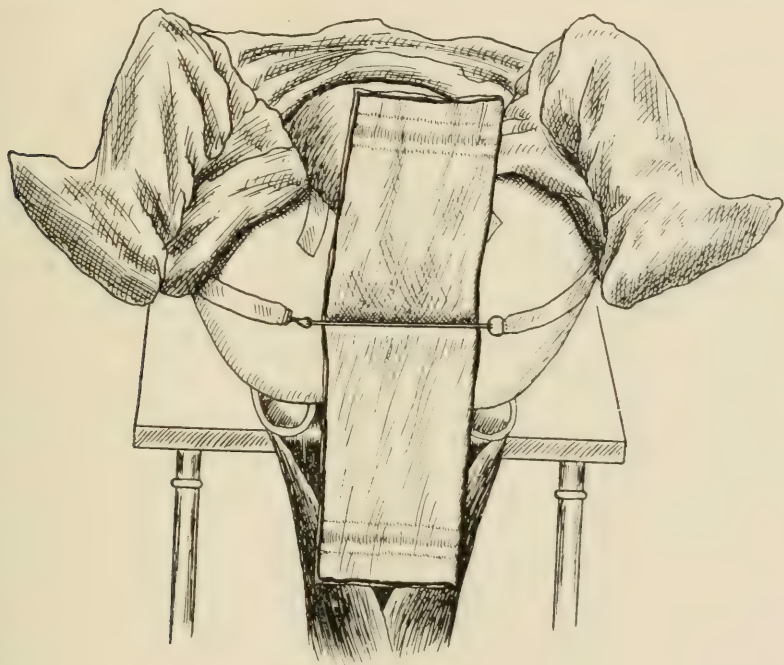


FIG. 2.

Patient is washed with ordinary soap and water and the vulvar hairs clipped before any attempt at dressing the patient is made. I usually do this myself with gloves on, washing the external vulvar parts very well with water into which a little green soap has been poured. I then wash the gloves in an antiseptic solution, slip then off and proceed to the operation without gloves.

The forceps should be placed conveniently at hand on a table or chair, and it is usually better to allow them to rest in an antiseptic solution. I use for this purpose a solution of 1-500

izal which is nontoxic and nonirritating and of strong antiseptic powers. They may rest in this solution as long as required before the time for operation. It is also necessary to have at hand before the operation is begun a hot douche which is also better made of an antiseptic solution. I use the same solution as that which covers the forceps for this purpose, a solution of izal 1-500. This antiseptic is nontoxic and said to be many times more powerful than carbolic acid; it does not coagulate albumin and is very useful for obstetrical purposes.

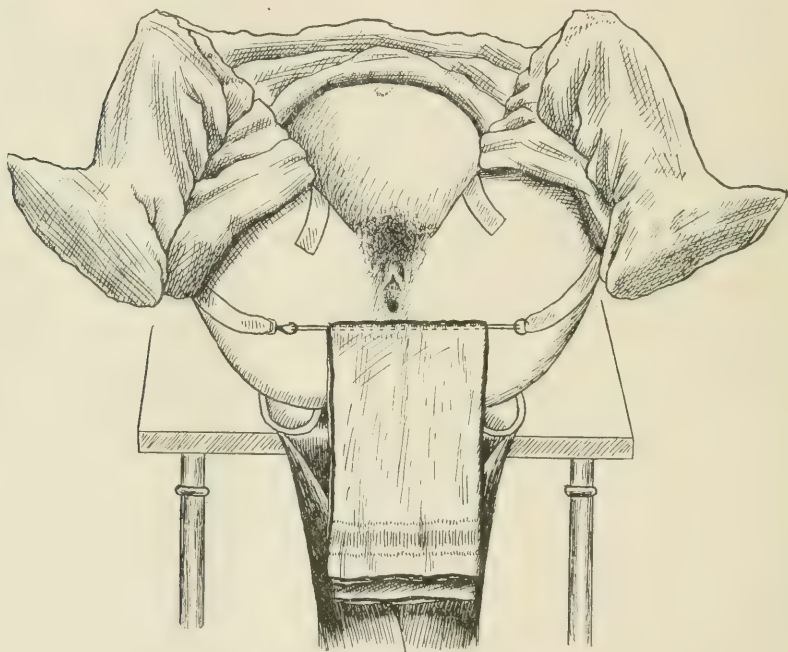


FIG. 3.

It has been used a great deal in Great Britain, and very good reports of its use in puerperal infection have come from Knyvett Gordon (*Jour. of Obst. and Gyn. for the British Empire*, 1907 and 1908, vol. xiv, No. 14), and Wilson (*Intercolonial Medical Journal*, 1909, May 25).

In making an examination before a forceps operation it is well that the labia should be held widely apart while the examining fingers are thrust in so that the fingers do not touch the outside of the labial surfaces, for it has been proved that the outer labial surfaces are more difficult of cleansing and contain many more

microorganisms than do the inner surfaces. It is also useful in making these examinations to employ a lubricant as the traumatism of thrusting in the dry hand may often in itself wound the mucous membrane. A useful lubricant for this purpose may be made from Irish moss, by boiling in water. Three ounces of Irish moss should be taken and washed in running water for a half hour. It should then be placed in two pints of water in a sauce pan and allowed to boil over a rather slow fire while constantly stirred. If it is not stirred it had better be put

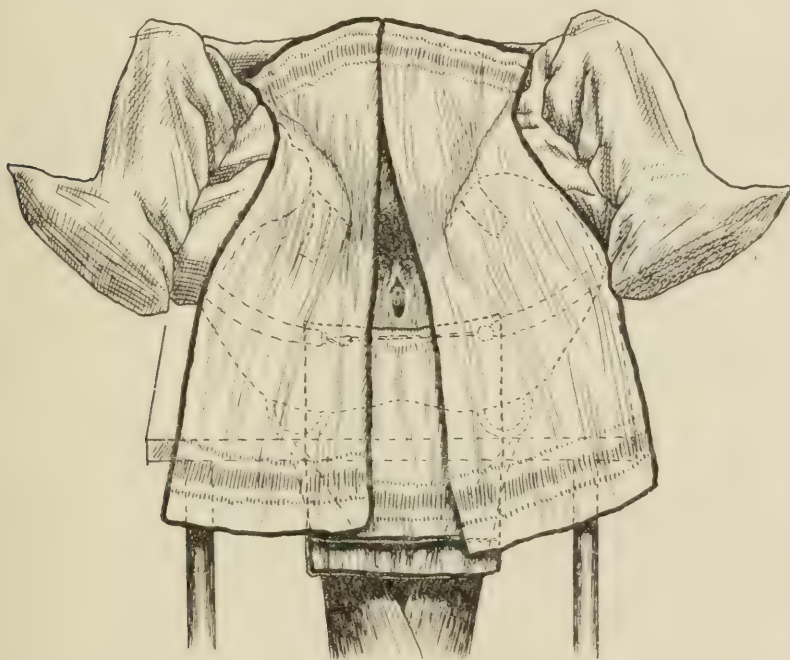


FIG. 4.

in a double boiler otherwise it will stick to the bottom of the sauce pan. After this has boiled for ten minutes it should be taken off and passed through a fine wire strainer such as is used in kitchens. If it does not flow readily through the strainer it may be expressed by means of rubbing a large spoon against the meshes of the wire. This strained jelly is again put upon the stove and sterilized by boiling for one-half hour with sufficient water added to make it of the consistency of jelly. After one-half hour of boiling the jelly is taken from the stove and poured

into lead paint tubes\* which have been previously boiled with their stoppers in another vessel. Before the jelly is poured into the tubes it is my custom to add to it the antiseptic, izal, in the proportion of 1 to 500 in order that the lubricant should have some antiseptic power.†

In making vaginal examinations before a forceps operation it is often useful, at the same time and even while the patient

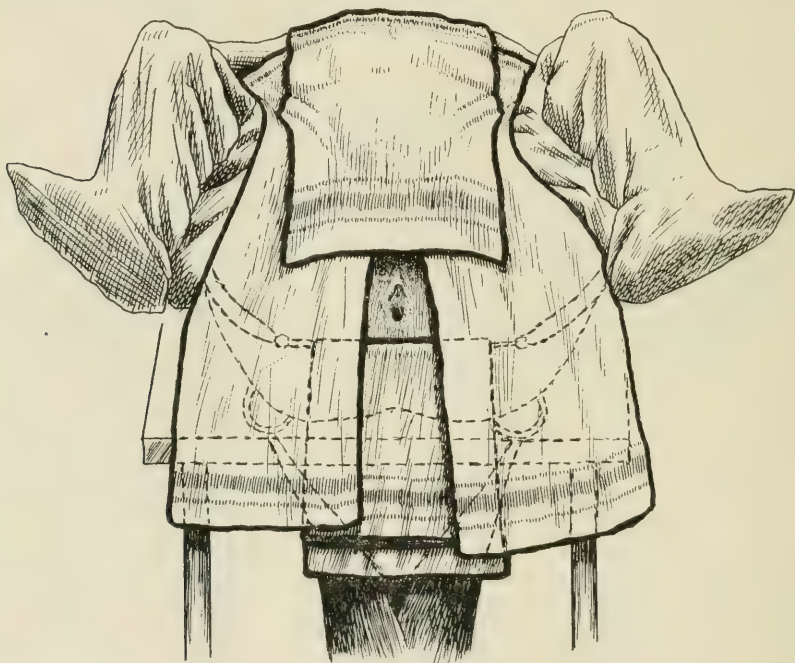


FIG. 5.

is going under her chloroform, to attempt to dilate the vaginal orifice. This may be done by means of thrusting the entire hand into the vagina, or better by pressing down upon the perineum with the first and second fingers of the hand and

\* These collapsible tubes may be obtained from the National Can Company of Detroit, and cost for the 1 x 6 inch size about three dollars per gross, or two cents apiece. The jelly costs about five cents a quart when finished.

† This lubricating jelly may be used for vaginal examinations in the office, or for lubricating catheters, etc. If it is required for this purpose, it is better in place of the izal to use some of the milder aromatic antiseptics such as thymol, gomenol 2%, etc., as a preservative. If it is desired to make the jelly clear and transparent it is better to add a large quantity of water and filter through muslin and later evaporate to the requisite jelly-like consistency. However, there is little advantage in going to this trouble in order to get a clear product as all that is required is lubrication and antiseptis.

massaging them from side to side. This will add considerably to the ease of delivery and at the same time when done with lubricant causes but little traumatism to the mucous membrane.

Chloroform is by all means the best anesthetic at present. Pregnant women bear it well, much better than the nonpregnant, and come out of it easily. Chloroform should be given carefully to keep the patient under very lightly until forceps are applied, then the anesthesia should be a little deeper and when the head is upon the perineum and being delivered; the anesthesia is practically that required for minor operations. If there is any sudden loss of blood during the operation the nurse should be instructed to watch the pulse of the patient until the circulatory equilibrium has been restored. Ether is contra-indicated in the forceps operation because pregnant women

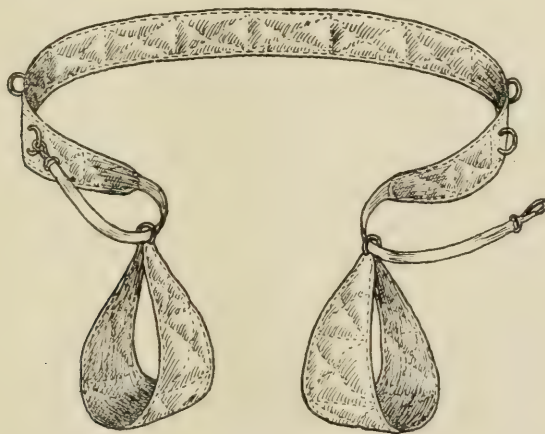


FIG. 6.

bear ether badly and suffer from respiratory irritation causing excess of mucus and stertorous breathing. The fetus is also affected by ether as is often observed in Cesarean operations where ether is used, and the fetus delivered under the influence of the anesthetic is difficult of resuscitation with an odor of ether upon its breath. Applegate of Philadelphia has reported to me in a personal communication that he had used spinal anesthesia with good effect, but in the present knowledge of this form of anesthesia it would seem wiser to wait for more complete reports before using it unless specially indicated. My experience with this form of anesthesia in other conditions would lead me to believe it the ideal anesthetic were its dangers removed.

*Choice of Instrument.*—The great factor in the success of the operation is the choice of the proper instrument. Very few students come from college with any knowledge of the advantages of the various types of forceps. First, the forceps should not be too long in the blades as are the forceps of the Simpson type. In forceps of this type when tractions are made on the head so that the head comes upon the perineum, and the tractions are then made in an upward direction, the blades which grasp the head over the parietal process pivot upon these processes and the tip of the blades projecting beyond the head impinge upon the pelvic floor and cause traumatism, often wounding the vaginal mucous membrane to cause the beginning of a perineal tear. This has been shown in a study of perineal injuries (McDonald, *Lacerations of the Perineum, Surgery, Gyn. and Obst.*, Jan., 1908) where a number of vaginal tears were begun in this way, and where it was noted that, as soon as the continuity of the mucous membrane was impaired, the stretching by the descending head caused small lacerations to increase in extent just as a small tear in a piece of cotton will readily extend. The muscle also in these cases often splits along the lines of cleavage to such a degree that, in one case reported in that paper, there was a separation of planes of the muscle down to the skin in the sacro-iliac fossa. For this reason it is well to have the blades of the forceps as short as consistent with a firm grip of the head.

Another disadvantage of forceps of the Simpson type is the width between the shanks. This often causes stretching and tearing of the fourchette before ever the head approaches the perineum. For this reason, the shanks between the blades and the lock, when the forceps is applied, should not be widely separated.

One requisite of good forceps is that they should be easy of application. For this the blades should not be too wide and the cephalic curve should not be too great. In order to obtain forceps which fulfill these requirements I have modified the Tucker-McLane solid-blade forceps in certain ways. These solid-blade forceps give the best satisfaction to those who are accustomed to its use and are well known and widely used in New York. The disadvantages of the Tucker-McLane solid-blade forceps are 1. the length of the blade which permits the points of the forceps to go down a little too far over the head of the

child; 2. the tips of the blades approach too closely together, and 3. their tendency to slip off the head if not skillfully used.

With the idea of remedying these defects, I have shortened the blades, widened the tips, and caused a number of transverse fenestra to be cut in the blade (Fig. 7). The handles remain the same. These modifications cause the forceps to approximate more closely to the fetal head, to grip more firmly the parietal eminences which are the firmest part of the fetal skull, and they

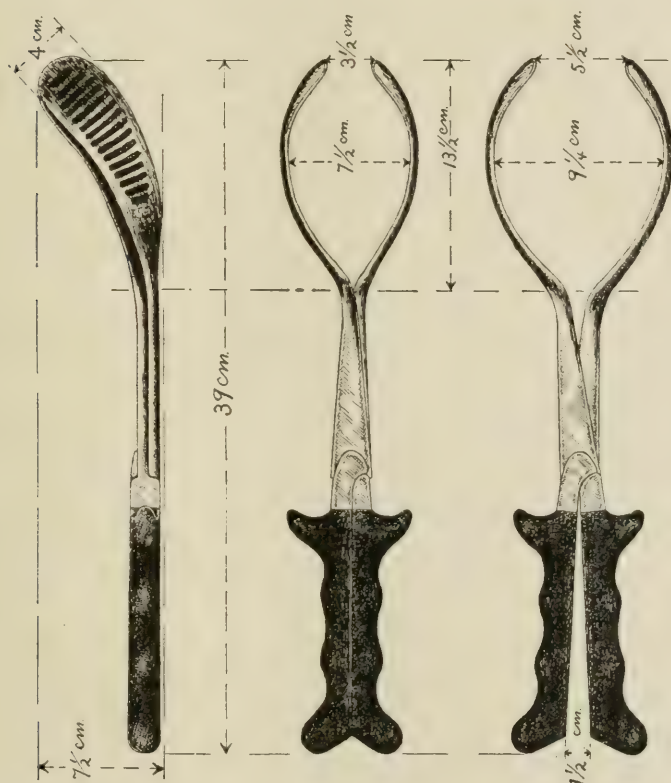


FIG. 7.

are not prone to slip off. The measurements of the forceps, as may be seen from illustration (Fig. 7) are, when the forceps are closed, 3.5 cm. between the tips. The bowl is 13.5 cm. in length. A very interesting proof of the correctness of this degree of division of the tips is that when the forceps are divided, as may be seen from the illustration, to the size of the average biparietal diameter, 9.25 cm., over which they would be naturally applied,

the points of the forceps are separated 5.5 cm. In measuring the Elliott forceps and the Tarnier forceps, after the forceps under discussion had already been modified, it was found that when the forceps blades were separated to the size of a normal biparietal diameter, 9.25 cm., that the space between the tips of all three of these forceps measured 5.5 cm. In other words, three investigators—Tarnier, Elliott and myself—have independently come to the conclusion that, with an average-sized head, the forceps tips should be separated 5.5 cm. If the points of the forceps are narrower then this undue pressure comes over the stylomastoid process and the tender facial nerve with an increased possibility of facial paralysis in the child.

The multiple fenestra do not detract from the strength of the forceps nor from the ease of application and add considerable to the gripping power to prevent slipping off the head. These semi-fenestrated forceps have an advantage over forceps of the Simpson or Elliott types in that the blades may be narrower and the pressure on the fetal head better distributed, with a lessened danger of tearing the ears or marking the child. These forceps have been in use with satisfaction since 1904 by a number of operators without, however, the multiple fenestra. This is a later modification to prevent slipping. In addition to the advantage of the shortened blade is the lessened possibility of pinching the cord against the head or neck with the tip of the blade. The blades, as modified, fit the head closely and were so made after more than a hundred fetal heads and measurements had been investigated by means of casts and lead tape outlines.

These forceps have the advantage of ease of application because of the shortness and narrowness of the blades. They have all the advantages of the solid-blade forceps with the additional advantage which the solid blades have not, that there is little or no danger of slipping off the head.

*Application of the Forceps.*—The forceps operation should be divided for the purposes of classification into the operation 1. When the head is above the perineum, and 2. When the head is upon the perineum, as different methods of application are used in these different situations.

When the head is above the perineum the first two requisites before forceps should be attempted are that the cervix should be fully dilated, and that the head should be fixed at or in the pelvic brim. If the cervix is not fully dilated there will be

grave danger of the possibility of uterine rupture or cervical laceration into the broad ligaments, and forceps should never be attempted under any circumstances unless dilatation is complete. If the head is not fixed, forceps cannot be successfully applied; as, for example, in the condition known as floating head, when one blade of the forceps is applied, the head moves before the other can be put in place so that the application is not successful and the operation is useless. Those cases in which a quick delivery is necessary with a floating head had much better

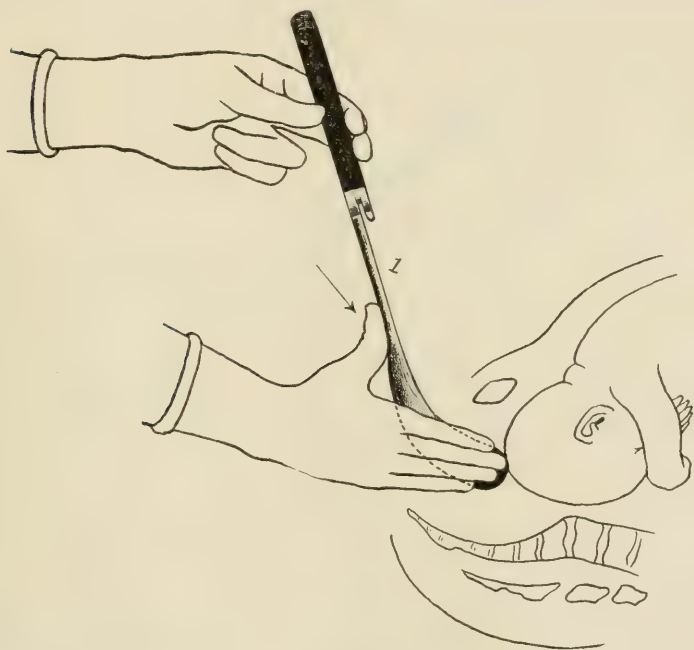


FIG. 8.

be treated by version, for, if the head is floating, the uterus is usually relaxed so that version may be done, or the operation may be postponed until the head becomes fixed at the pelvic brim.

*Application of Forceps to the Head above the Perineum.*—When the application to the head above the perineum is made the handle of the forceps is taken between the thumb and finger of the left hand while the right hand is passed into the vagina until it strikes the bulging curve of the fetal head. The forceps

is then passed along the palm, the thumb being extended along the shank of the forceps. The handle of the forceps is held almost perpendicularly while the points of the blades are dropped down along the floor of the vagina until the point of the blade impinges against the head (Fig. 8). The handle is kept during all the time in the midline of the patient's body and not deviated to one or the other side. The advance of the forceps is obtained from pressure of the extended thumb upon the shoulder or shank of the forceps, in this way propelling forceps up along side of the head. The forceps handle being held all the while in midline, the point of the blade is abducted so as to bring the point

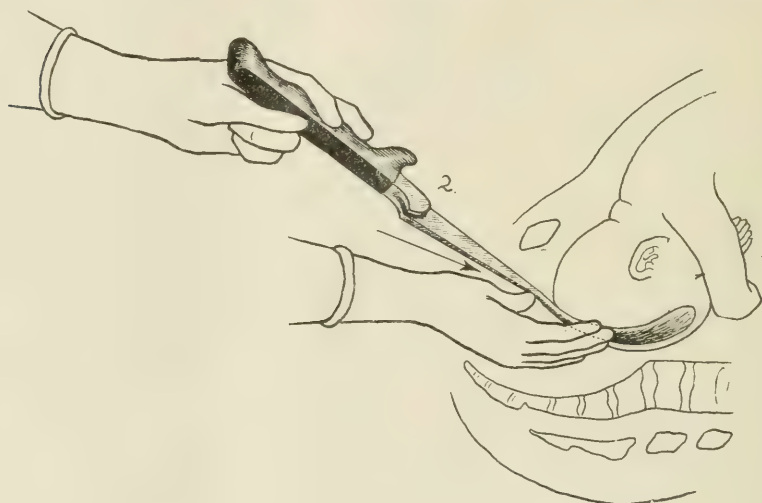


FIG. 9.

of the blade away from the midline of the child's head. The point of the blade driven by the pressure of the thumb upon the shank may thus be passed up along the side of the head so as to go almost into position. The handle of the forceps being held all the while in the mid-axial line of the patient's body (Fig. 9). The third movement of the forceps brings the point of the blade upward into the position over the side of the head while the handle is dropped downward toward the perineum. The forceps thus rotates around a fixed point which is near the lower border of the symphysis at the entrance of the vagina. The application is done in three movements as may be seen from Fig. 11. The first position up against the head, the second abduction of the point of the blade and advance along side the

head, and the third adduction of the blade by rotation of the handle which is at the same time lowered to the perineum. This method of application is taught by Winter in Germany and well taught in this country by James Markoe. They teach the method as a pelvic application. It, however, may be equally well adapted to cephalic application or application over the biparietal processes by means of a little additional manipulation. This method of application is difficult of description but can be readily demonstrated on the obstetrical phantom or over a round ball or bowl.

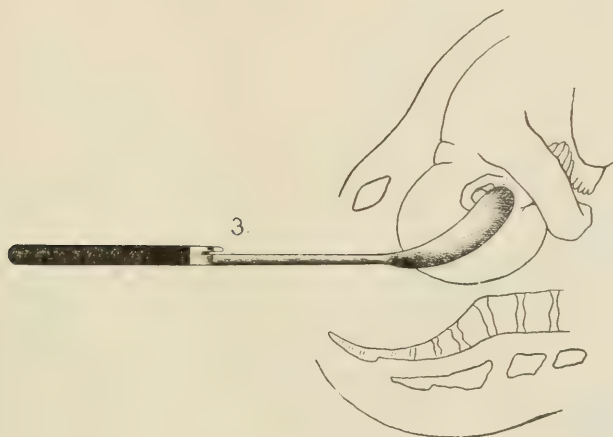


FIG. 10.

It is needless to say that a practical necessity to the proper cephalic application of the forceps is a true knowledge of the position of the fetal head, and it is useful for this purpose to make abdominal examination early in every labor so that the position of the engagement may be known, as it is sometimes difficult to decide the position of the head by vaginal examination when the head is already engaged in the pelvis and when the scalp may be edematous.

The three movements of the application may be seen in Fig. 11. The second blade is applied in the same way and the forceps rotated to their proper position along side of the fetal head. The hand should be passed up to see that the cervix or cord is not grasped before traction is begun. If there has been a proper application in an average-sized head of 9.25 cm. biparietal diameter the forceps handles should, as may be seen from Fig. 7,

be 1.5 cm. apart, that is the width of the middle finger. If there is a large head with biparietal of 10 cm. the forceps at the handles will be separated 2 cm., the width of the thumb. This way of estimation of the divergence of the handles gives some idea of the correctness of the application. If the forceps are divided at the handle more than 2 cm. it is very possible that the proper cephalic application has not been obtained, as very

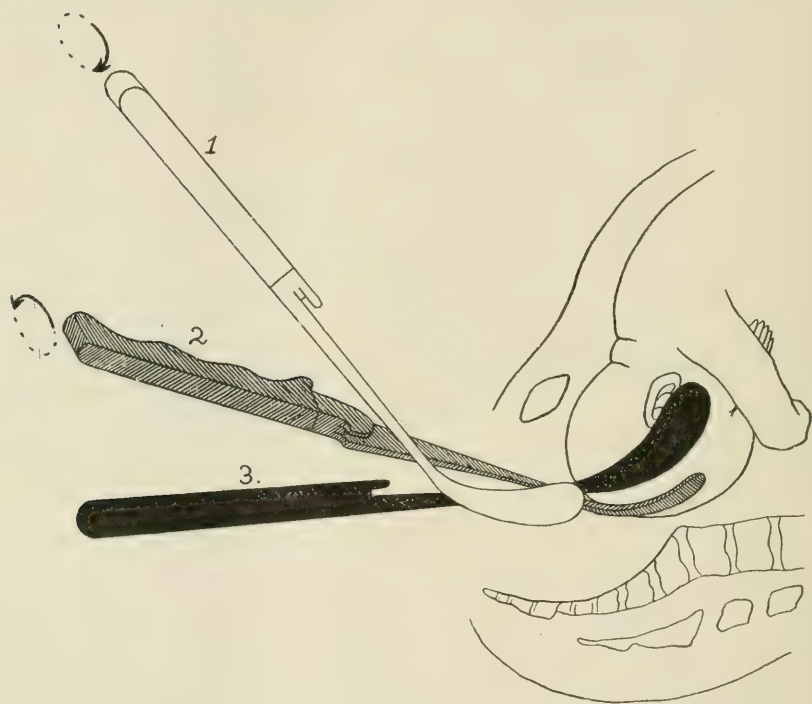
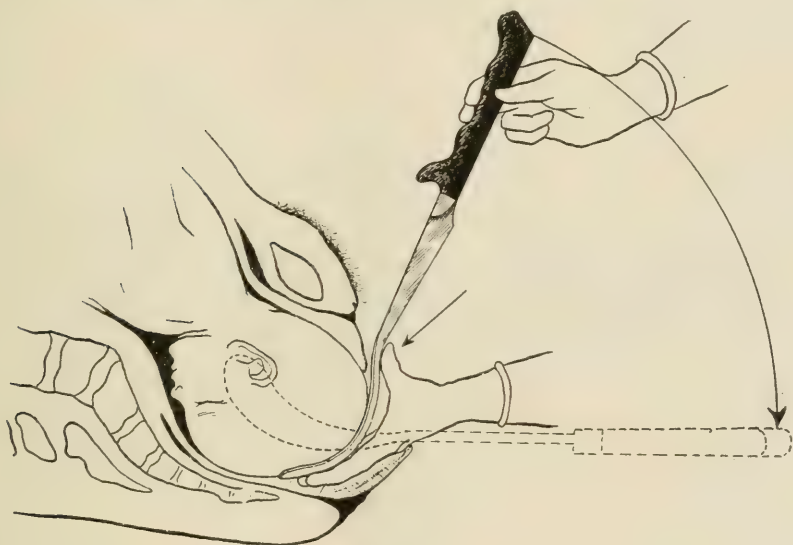


FIG. 11.

few heads are of more than 10 cm. biparietal diameter. This is of considerable use in teaching the forceps application to students for, after the forceps have been applied merely by looking at the handles, it can be said whether the proper cephalic application has been achieved.

*Application to Head upon the Perineum.*—This method is not applicable to the second classification of the forceps—head upon the perineum—for in this condition the head occupying the lower part of the vagina and closely approximated to the perineum, the forceps cannot be inserted up against the head in the same

way as in the other method. In this method the forceps are best passed in upon the under surface of the fingers and rotated around the head so as to bring them into proper position over the parietal eminence. The propelling force in this case also being the thumb extended along the shank of the forceps. This method of inserting the forceps by the thumb precludes any possibility of damage to the maternal soft parts as may occur if the blades are forced in by the grasp of the upper hand upon the handle as if the forceps were a spade or trowel.



F G. 12.

*Method of Traction.*—The forceps then being in position, the operator should stand upon the right side of the patient, with his hip against the table or against the woman's buttock. If possible he should have a sterile gown, but if not he can guard against infection by means of two sterile towels pinned to his clothes. The left hand should grasp the forceps inside the locks and make pressure downward (Fig. 13); the right hand should grasp the forceps very firmly from below with the first two fingers coming up over the flanges of the locks and the other two fingers going over the handle of the forceps and down between their division. The right arm should be held firmly against the right hip and then traction should be made in the direction of the pelvic curve until the head is upon the perineum and the occiput ready to

pivot under the symphysis. The advantages of this position are that there is no danger of a sudden descent of the head causing it to tear the perineum. The amount of traction is controlled, there is no danger of the forceps slipping, and the blades of the forceps are not permitted to move upward or downward on the fetal head as the forceps are controlled in every direction. In addition to this, Pajot's maneuver or traction in the direction of the pelvic curve may be much better obtained because the right hand, which passes underneath the forceps, gives a lever of at least 12 cm. longer than if the right or directing hand were placed above the handle of the forceps as in the customary way.

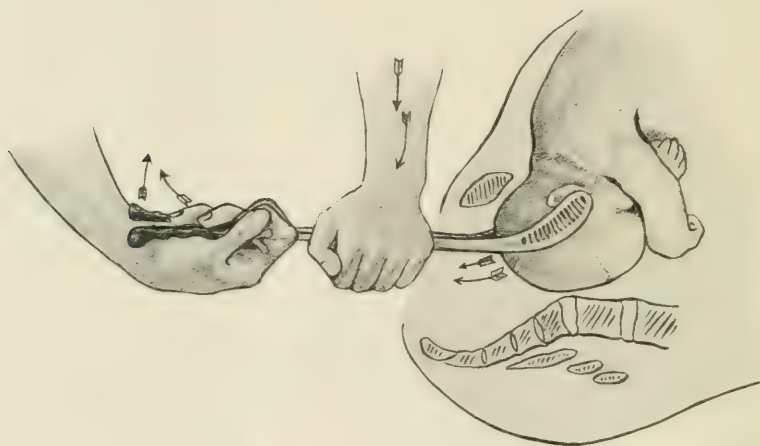


FIG. 13.

This is of considerable advantage in high operations, and Pajot's maneuver obtained in this way so satisfactory that the semi-fenestrated forceps may be used for any of the operations for which the axis traction forceps are usually required. Instead of a lever of 4 cm., as is obtained when the right hand is placed above the handles as is commonly done, a lever 12 or more cm. is obtained when the hand is placed *below* the handle of the forceps, and much greater control of the blades and direction of the operation is achieved. An additional advantage of this grasp of the forceps is that the fingers of the lower hand curling around the handles pass in between the division of the handles and prevent undue compression of the head.

This method of making tractions will be found to have certain advantages over the others in control of the head and of the

tractions. It will enable the high operations to be done without axis traction forceps, as the pelvic curve may be followed exactly. Of all bad methods of making traction, however, that of holding the forceps by one hand while the other is held against the head to note the amount of descent, is the worst. There is no control of the head or the forceps.

*Delivery of the Head.*—With the left hand above and the right hand beneath, traction in the direction of the pelvic curve should be made with the operator standing until the head is well down upon the perineum and the occiput ready to rotate under the symphysis. Then the direction of the traction is of course almost

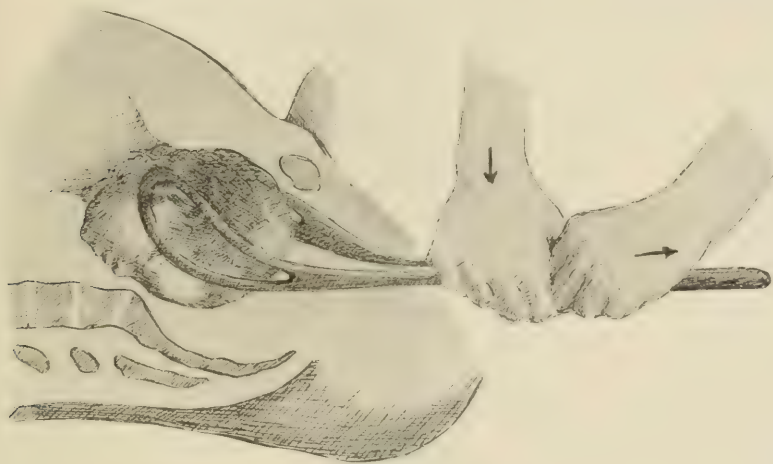


FIG. 14.

upward in relation to the table. Then the operator should grasp the forceps by the locks with his left hand, holding the head in position, while he sits down and putting his foot upon the stool, he may by resting his elbow on his knee and by pressure of the finger tips bunched together through the protecting towel and between the anus and the coccyx, control the advance or return of the head while the forceps blades are removed one at a time with the left hand and passed upward on the sterile towels on the patient's abdomen. This method of control is shown diagrammatically with the towels removed for the purposes of illustration in Fig. 14. If the head cannot be at once controlled, the forceps should not be removed, but another traction or so made until control of the head by pressure of the fingers is obtained. When the head is thus controlled by the

right hand through the perineum, the left hand should be placed upon the occiput so as to control any sudden advance which may occur if the patient is imperfectly under the anesthesia.

When it is seen that the head can be perfectly controlled, it should be delivered slowly by pressing upward with the right hand against the child's forehead through the perineum, at the same time making efforts to gently push back the perineal ring

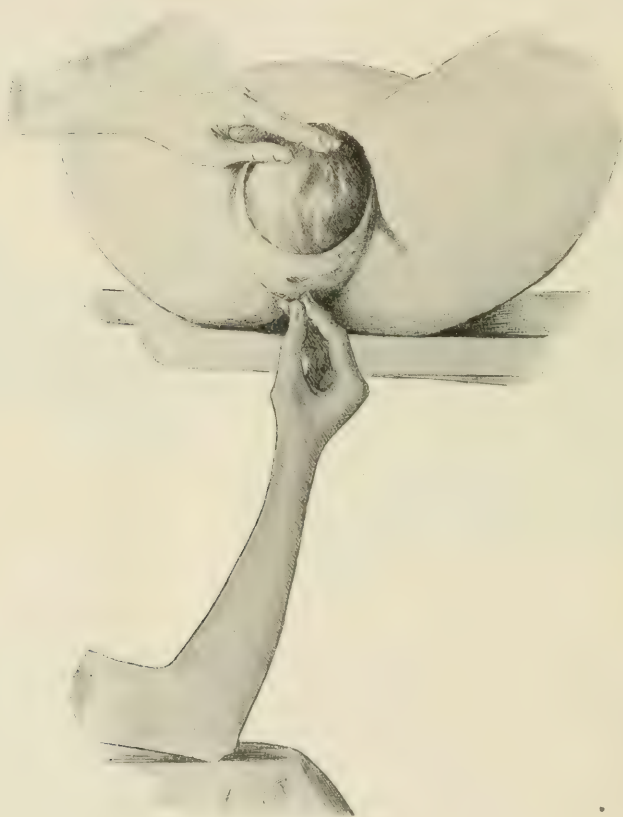


FIG. 15.

around the head. It is often possible to push the anterior part of the perineal ring down over the occiput so as to allow the occiput to slip out from underneath the symphysis and to markedly increase the roominess of the perineum. This should be done by gently shoving back the perineum over the occiput and upper parts of the perineal ring. When it is seen that the

head can be easily delivered more pressure may be put upon the fingers of the right hand and the head shoved out.

In this way the possibility of perineal laceration is much lessened, and there should be no more chances of perineal laceration with forceps than without forceps. In fact, most operators skilled in forceps delivery will say that there is less chance of perineal laceration with forceps than in the ordinary cases.

The advantage of having the foot on a stool is that the knee so forms a rest for the elbow and the arm does not become tired. An upturned bucket is a useful substitute for a stool.

It is always advisable to remove the forceps before delivery of the head as there is much less danger of perineal laceration by that method and it adds but little to the time of delivery. It is also true that in delivery of the head by the long forceps there is great danger from the pivoting of the forceps upon the parietal eminences, as before mentioned, causing the blades to impinge upon the perineal body and so cause a laceration. The delivery of the head after the forceps is removed, unless for special cases such as the weakness of the child, should not be hurried, but should be done slowly to avoid laceration of the perineum, extending over a time from three to fifteen minutes.

The ease and simplicity of the forceps operation depend upon a proper knowledge of the method of application and delivery. By the use of these methods, rigid asepsis may be practised and little injury done to the mother or child. The secret of successful forceps operation lies not in the muscles of the ox nor in the brawn of the bull, but in a knowledge of the proper direction of traction in the pelvic curve, a good instrument, gentleness and cleanliness.

174 WEST FIFTY-EIGHTH STREET.

## ENTEROPTOSIS.\*

ITS CAUSES, VARIETIES, DIAGNOSIS AND INFLUENCE UPON THE  
HEALTH OF WOMEN.

BY

I. S. STONE, M. D.,  
Washington, D. C.

ENTEROPTOSIS, as an anatomical or pathological entity had been recognized by Virchow and many others prior to its thorough study by Glénard, who reported the result of his investigations in 1885 (*q. v.*). Immediately after this, innumerable papers appeared, largely contributed by German writers, who acknowledged the importance of the subject and its wide prevalence.

*Definition.* — Glénard's disease, including enteroptosis or splachnoptosis, is a prolapse or displacement downward of any part or all of the abdominal viscera. Associated with and influenced by it we also include prolapse and displacement of the pelvic organs of women.

*Causes.* — We confess our inability to attribute this disease to any special influence. We have reasons to believe in the existence of the congenital and of the acquired varieties and in what are known as contributory causes, but these are usually preceded by some one of those above mentioned. Rosengart (Vienna) writes favorably to its embryonic or congenital origin. He says the rapid development of the small intestine from the fourth to the seventh month displaces the large bowel (the "hindgut") to the left, and downward. Rosengart and Meinert have much to say of the development of the intestinal canal and of the influence of heredity, etc. Attention is called to the well-known vertical position of the stomach seen in young infants, as proof that enteroptosis is due to arrested development. Kussmaul thinks the Rosengart idea practically correct, but says it is a secondary, not a primary cause. Stiller (of Budapest) believes that the disease is always associated with nervous dyspepsia, atony, and neurasthenia. He discovered a floating or movable tenth rib in seventy-eight of 130 enteropterics, and called it the "enteropteric stigma." The stomatologists, notably Ewald of Berlin, and Einhorn of New York City, have given the subject

\*President's address before the Washington Obstetrical and Gynecological Society, October 1, 1909.

much thought and in the main endorse Glénard's views, and, like nearly all writers, condemn the corset as a contributing cause of the disease. Meinert believes the corset may yet produce a permanent change in the form of the human body. He asserts his belief in the Stiller tenth rib "stigma," and says there is often a fibrous connection when the cartilaginous union is absent. Boas suggests that many cadavers show this apparent defect without having enteroptosis. Koellreutter found 10 per cent. of all cases in his clinic to have a movable tenth rib, and Einhorn believes that perhaps 25 per cent. of all neurasthenics or nervous dyspeptics have this anatomical defect.

*Sex.*—Einhorn says that of 1,912 patients (seen in 1900) 1,080 were males, 832 females. Of these there were 347 enteropterics, 277 of them women and seventy men. Of patients with digestive troubles 6.2 per cent. were men, while 34.8 per cent. were women.\*

*Changes in Body Form.*—Enteroptosis may be suspected by mere inspection of certain types of women. A majority of lean women with round shoulders, straight back (absence of normal lordosis), protruding lower abdomen, and flat or scaphoid epigastrium, have the disease. Especially is this true if the patient has had children and has been a "toiler." She may never have worn a corset or even a tight band or belt. The neck will project forward, the ribs slant downward, and the "epigastric angle" will be relatively acute. The antero-posterior diameter of the thorax is diminished, and one writer (Smith) has frequently found such women to have "flat-foot."†

*Internal Changes.*—A depression of abdominal organs necessitates a change in the position of those immediately above them. Einhorn says the heart is perceptibly lower in enteropterics. He has found the impulse at the fourth instead of the third rib, and has seen such a condition return to normal when the patient recovered her general health, *i.e.*, when the enteroptosis was cured. If the kidney is displaced downward the adjoining coils of intestine must occupy its former position, but when the liver and all of the organs in the upper abdomen descend, a change of position of thoracic organs must follow, as well as a change in the shape of the thorax itself. We have seen several patients whose stomach and transverse colon were on a level with the pubis.

\* Stockton (Buffalo) says one-half of all civilized women have enteroptosis.

† Smith gives elaborate details of the measurement of the "epigastric angle." (Tr. Amer. Gyn. Soc., 1906.)

In these we may have the "V"- or "M"-shaped colon, or both the splenic and hepatic flexure, most frequently the latter, may be found greatly below their normal position. The cecum and sigmoid are so frequently seen displaced that it is time for us to study the relation of such displacement to the various diseases requiring surgical treatment, notably appendicitis.

The position of the prolapsed kidneys should be considered a part of and not the whole trouble. We note the great benefit ascribed to operations upon movable kidneys and believe this not so much due to a fixation of a normally movable organ, but rather due to a change in position or elevation of peritoneal support of the organs in the vicinity of the kidney—namely, the colon and pyloric end of the stomach. The relief of certain gastric, duodenal, or nervous symptoms may have been brought about in this way, a result which could be called at least plausible or rational, while nephropexy is an empirical procedure. It has been observed by nearly every student of enteroptosis that uterine and bladder displacements are frequently associated with it, and we are convinced that patients with enteroptosis need more than to have a uterine displacement treated, surgically or otherwise.

The displacement of the pelvic organs results from changes in the connective tissue and fat behind the pelvic peritoneum, very similar to those which occur in the supports of the abdominal organs. The peritoneal ligaments are all elongated, while the round ligaments are perhaps overstretched because the usual retrouterine peritoneal support has relaxed or disappeared. But the descent of the uterus and bladder is not altogether due to this loss of peritoneal and ligamentary support, for an elongation of the mesentery permits an extra burden of intestinal weight, while intestinal fermentive mischief so commonly seen in these patients also exerts its force in addition.

*Contributing Causes.*—We are told that the female thorax is precisely the same normally as the male, and that the waist of the Venus de Milo is of the correct type. If so, the circumference of the body at the waist, and under the arms, equals one-half the height. Without attempting to deny much that Engleman, Dickinson, Kellogg, and others say about the evil results of corset-wearing, we have the proof that enteroptosis does frequently exist in people who never saw nor used any method of constricting the waist.\*

\* Smith says Becher and Lenhoff examined twenty-four Samoan women and found a number of enteropterics among them. Noble also has found that Arabian women, who do not wear corsets, have enteroptosis.

The typical enteropteric is the toiler who probably has had numerous children, and who is lean, nervous, and generally unhappy. Loss of fat in the mesentery or elsewhere behind the peritoneum may well be considered a cause of ptosis, and it is the restoration of this fat that appears to attend the recovery of patients who have the acquired variety of the disease. The absorption of fat may be equivalent to a prolongation or stretching of connective tissue in the so-called ligaments which sustain the viscera which is comparable to that which sustains the pelvic organs in position. We have every reason to believe that certain predisposing causes exist prior to or independent of puberty, or the time when young women begin to wear corsets. These conditions favor the development of enteroptosis, and especially so when tight lacing, numerous pregnancies, and a life of toil, either one or all combined, are added to them.

*Intraabdominal Pressure.*—Many volumes would be required to contain all that has been said about intraabdominal pressure. We often hear of its importance, but think we may for the most part dispense with the philosophy of its action, if not with the entire subject. The practical fact is that we are concerned with the force exerted in all directions when either fluid or air is compressed.\* The abdominal viscera are confined in a position which permits their displacement forward and downward when the waist-line is compressed by bands or corsets. Obviously the posterior and upper abdominal walls (so-called) are substantially firm and only yield slightly to compression or force, hence the supposition that external pressure results in prolapse of some of the abdominal organs. The evils of corset-wearing are obvious enough when the young and immature girl has her thorax constricted while yet developing, and while the ribs and costal cartilages are still yielding and pliant.

*Symptoms.*—We may with confidence quote Glénard who spoke of this disease as "universal." The association of dyspeptic, nervous, and anemic or chlorotic symptoms will first attract our attention. Loss of weight with poor nutrition appears to drive patients to seek treatment. We see many neurotic patients who think some slight uterine discharge or perhaps a retro-displacement the chief cause of their suffering, but who have enteroptosis in greater or less degree. Replacement of the uterus will not always cure the symptoms. There is an

\*Smith well says, "There is no special universal positive pressure from within," as has been asserted.

association of gastric hyperacidity, constipation, and vague abdominal and pelvic distress, besides the usual headaches, backaches, and leukorrhea. Such patients are particularly susceptible to impressions, and often think they have ovarian or appendicial disease. Occasionally we see alternate constipation and diarrhea in these cases, and find medical or dietetic treatment thereof very unsatisfactory.

*Diagnosis.*—Our duty is first to decide between organic or constitutional disease and displacement of the viscera. The importance of excluding acute or chronic changes in the stomach, gall-bladder, or other organs cannot be overestimated when we examine these cases. We have seen patients with nearly all of the apparent symptoms of enteroptosis, who had gall-stones or pyloric stenosis or dilated stomach, without general visceral ptosis. Obviously, we would find these conditions without changes in the body form, such as are frequently seen in enteroptosis. The clinical history should render mistakes very improbable, and our exact measures by which we can ascertain the size of the stomach and the position of both stomach and intestines gives us almost absolutely certain results. In office examinations the detection of a movable right kidney is always considered sufficient ground for further examination of the size and position of the stomach. This is easily done by using the sedlitz mixture, or even by having the patient drink a glass of water, provided the stomach is known to be empty. Our plan is simply to try succussion with the patient in the supine position, then again after drinking a glass of water, when the area of resonance is easily made out and the difference made by the residual gas noted. Finally, if necessary, the bismuth test with the skiagraph picture can be used if further information is desired.

*Treatment.*—It is well to promise but little when one is called upon to treat a case of enteroptosis which is either of congenital origin or acquired in early life. Here we would have changes in body form which would be extremely difficult to overcome. Hence it should be our province to relieve these patients and make their lives bearable or condition comfortable. The nonoperative cases include those who are essentially neurotic or who have extremely pronounced symptoms without much ptosis. We have, however, hesitated and declined operation upon a patient with only fairly movable kidney and slight enteroptosis who was soon after apparently cured by another surgeon

by means of a nephropexy. I am convinced that he unwittingly did more and builded better than he knew by fixing the hepatic flexure of the colon and the pylorus at a higher level.

In the acquired variety of enteroptosis we find the greater number of cases which may yield to treatment either by surgical or nonsurgical means. We believe the vast majority of the patients can be relieved by treatment if they submit to the methods which have been found useful. In any event, we may employ some one of the various means of abdominal support, combined with the posture method. We have noticed the wonderful benefit of the bandage which may have failed to support the kidney or stomach, but produced good psychological results. Anything to restore fat, such as the rest treatment with feeding and massage, will be of great service to these patients.

The posture treatment includes the high pelvis position, which can always be used for an hour or more before going to sleep at night. Finally all of these methods, in order to be of the least benefit, must be practised upon intelligent patients who will understand the importance of the various suggestions made by the physician, and who will cooperate with him.

*The Selection of Cases for Surgical Treatment.*—The usual means of cure, such as diet, rest, position, bandage, etc., having been tried, what shall determine us to seek surgical aid? Obviously enough, many of the results of child-bearing or enteroptosis mainly acquired by labor of any kind or muscular weakness of the abdominal walls may generally be relieved by surgical methods. Those results of childbirth which nearly always occur in an enteropteric, such as uterine and bladder displacements, are amenable to surgical treatment and prove among the most beneficial of all gynecological operations, provided the operator fully realizes the full extent and nature of the changes he proposes to relieve. The cure of a pendulous belly by a restoration of the abdominal muscles and fascia to their former anatomical position is essentially a successful and much needed operation. It may be good surgery to remove some of the superfluous fat during operations for diastosis of the recti, as the external fat is not only a burden but prevents perfect muscular development.

Certain investigations by Metchnikoff and others show the bacterial origin of many intestinal diseases and especially intestinal dyspepsias. He (Metchnikoff) has proposed to extirpate the colon as an unnecessary appendage to the alimentary

canal. May it not be possible that some method of restoring the colon to its position may save some patients from a more dangerous operation? We have all seen the admirable results of operative treatment of dilatation of the stomach due to pyloric obstruction; and, personally speaking, some of the happiest results we have ever seen in intestinal surgery have come from replacement of some prolapsed portion of the large bowel where its function could be properly performed. The appropriate operations upon the stomach itself include those which may reduce the size of a greatly dilated organ, such as pyloroplasty or gastrojejunostomy. Next in importance would be one of the methods of making a sling of the omentum as proposed by Coffey or Beyea, and practised by many surgeons, notably by the Mayos and J. G. Clark.

We have had one successful suture case where the stomach was secured to the anterior abdominal wall, but the inclination in surgical thought is away from this method.

We think enough has been said of nephropexy to leave that for the present.

The suture of the gall-bladder to the abdominal wall greatly assists in sustaining a prolapsed liver, and we have on several occasions tried to secure the formation of adhesions between the right lobe of the liver and the peritoneum under the ribs adjoining.

Operations upon the colon to restore its outline appear most successful, and we fully endorse the position of Dr. Clark and those who incline to the belief that malpositions of the colon and sigmoid are responsible for many of the obstruction cases, the cases of bowel impaction, and even those cases where there is alternate constipation and diarrhea. It is possible that many of these prolapses of the large bowel may be investigated with tube or bismuth  $x$ -ray and that we may ultimately discover some method of successfully treating these obstinate cases by surgical means.

STONELEIGH COURT.

## MALPRESENTATION OR MALPOSITION NOT THE CAUSE, BUT THE SYMPTOM OF DYSTOCIA.\*

BY

C. A. VON RAMDOHR, M. D.,

Professor Emeritus of Obstetrics in the New York Post-Graduate Medical School and Hospital; Consulting Obstetrician to the Lying-In Department of the Post-Graduate, and to St. Mark's Hospitals; Visiting Gynecologist to the German Poliklinik, etc.

WHAT do we understand by dystocia, *i.e.*, difficult labor? One party considers a labor difficult when it takes ten hours; another one at five hours' duration. At our present trend in which we consider labor not a physiological process but a surgical disease, we have a great deal more dystocia than we had twenty years ago when asepsis was in its infancy, and in each too early operation the operator had to pay his penalty by his results obtained.

Conservative members of the profession might wait hours and hours in knowing the reason why labor does not progress and in the general run have better results than the quick operator. Nothing is more difficult and again more to the point than interfering only for the proper indication at the proper time. Anybody who has mastered this science is away above the Cesarean section specialist with fifty cases to his credit.

All obstetrical operations are easy if performed for the proper indication at the proper time. If otherwise performed, the operator very frequently has to change his plans and thereby proves himself an embryo at the art and science of midwifery.

Ask any student, "What do you do in a case of transverse presentation" and without hesitation, 999 times out of a 1,000, he would answer, "I would turn." And the next answer to the question "Suppose you could not dislodge the presenting part," he would reply "decapitate."

He, like the majority of the present-day practitioners, would not reason why there is a malposition or a transverse presentation. If maternal pelvis and the fetus are of normal size, and no other exceptional condition present, there would always be a so-called first position, *i.e.*, vertex occipito-iliac left. The nearest part of the fetus is the liver, and given a slanting surface and salt solution, the right side will fall on the anterior surface of the uterus; while the next heaviest part, the head, will present itself

\* Read before the East Side Medical Association.

with the occiput to the left. Now, if this does not happen, as it does in 95 per cent. of all cases, it is not the malposition which is at fault but a reason why the normal presentation does not appear. Absolutely contracted pelvis might be the cause of a shoulder presentation, but under such circumstances no version and extraction, not even a decapitation, would be possible. Cesarean section only could be accepted. Thus it is not the malpresentation or malposition, but the underlying condition which may be remedied or may give the clue to operative interference.

Suppose a brow presentation occurs, the indication would be (a natural confinement being impossible) to make a face or vertex out of it if possible, or turn. But the cause of this brow presentation might be a nonengageable hydrocephalus, and neither of the just mentioned operations would be of any avail.

Now dystocia is observed at 6 A. M. or 6 P. M. when the general practitioner wants to go home after a night's or a day's vigil. Some of the leaders of the midwifery class have demonstrated again and again that a Cesarean section is an operation without danger to the patient if performed at the elected time in a lying-in hospital; and his pupils try to follow his footsteps in private practice with disastrous results. I occasionally have the honor of being invited to such operations and the operator will say: "Here we have a contracted pelvis, therefore, we perform Cesarean section." Nobody except perhaps the young house surgeon has estimated the measurement and nobody of the *hoi polloi* knows the reason why this operation should be indicated or another.

Dystocia is a relative idea. If things do not progress to the obstetrician's fancy he may call that a difficult labor.

But again the cause may be a hydrocephalus, a twin pregnancy, or a pendulous abdomen or monstrosity, and in either case the cause ought to be considered before going on with an operation. A hydrocephalus will need a puncture, a twin pregnancy may need the extraction of the other fetus first, a pendulous abdomen needs support, a monstrosity may need dismemberment; but you see a brow presentation does not indicate by any means the mode of operating. Again, a face presentation usually means that the fulcrum for some reason has been misplaced, and therefore the attempts at changing it into a vertex presentation will be futile unless the uterus pushed over by adhesions, tumors, etc., would be replaced once and kept replaced

until violent good pains would make the occiput engage and stay engaged. In such cases I personally have never succeeded in converting a face into a vertex unless everything was in apple-pie order, and the operation would have been done by nature instead of the clumsy hand of the obstetrician. If malpositions, brow, face, shoulder should occur before strong labor pains have set in, as temporary accidents (other causes having been excluded) they will right themselves if the conservative capable obstetrician is there to watch for the moment when peremptory version is decided.

Take a funis presentation; that again is a sign that something has gone wrong. You are told to replace it; put the patient in the position *a la vache* and wait for the engagement of the head. You will lose a great percentage of your children if you adhere strictly to this doctrine. The umbilical cord cannot come down unless there is reason for it and that usually is a contracted pelvis. Given, exceptionally a perfect pelvis and a normal head, such an accident may happen, but unless pains are good, strong, and regular a version of the part and quick extraction are the only things which will give you a chance to save the child.

I have given you my opinion concisely, but with latitude to show what I am driving at.

1. A superficial diagnosis of presentation and position doesn't make an ideal diagnosis.
2. Look for the underlying cause which produces the malposition.
3. Having made your diagnosis you have your indication for the proper operation which is always easy to perform at the proper time.

243 EAST EIGHTEENTH STREET.

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## A CASE OF MALFORMATION IDENTICAL IN BOTH ARMS.

BY

CHARLES R. STOCKARD, M. S., PH. D.,

Assistant Professor of Embryology and Experimental Morphology, Cornell Medical School, New York City.

(With one Illustration.)

DURING the past summer I observed an infant in Montgomery County, Virginia, which exhibited such striking modifications in the structure of its arms that I shall briefly describe it in the

following note. The description can only be given from a superficial examination, since the child is still alive.

This female infant was born during the first week of August and weighed at birth only two pounds. She increased in weight steadily and after five weeks weighed three and one-half pounds. I carefully examined the child when five and eight weeks old and

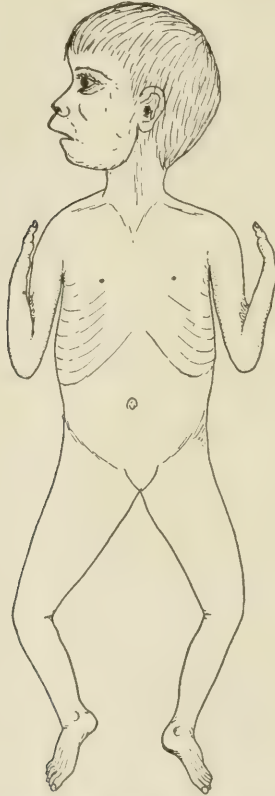


Fig. 1.—A child two months old with both arms deformed in an identical manner. Elbow-joint ankylosed. One forearm bone and only one metacarpal and one digit consisting of two segments and possessing a nail.

found a most peculiar structural condition. The entire body was weak and poorly nourished, the bones being distinctly outlined in the thoracic region. The circulation was sluggish and the blood insufficiently aerated as was indicated by the bluish color of the body, particularly the face and lips. The voice was weak, but it suckled vigorously at regular intervals. The trunk and lower limbs were normal in shape but extremely small and poor.

The head showed a decided prognathous condition. The lower jaw was small, its lips and gums closing some distance behind the projecting upper jaw thus leaving the mouth cavity open. The eyes were normal but the lids were inflamed and a pus-like substance was constantly accumulating. This condition of the lids began when the child was about ten days old.

The arms present the most striking structural modifications. The upper arm appears normal until the elbow-joint is reached, here an ankylosis or some unusual structure prevents the free movement of the forearm so that it remains in a flexed position and cannot be extended. A loose fold of skin extends for several centimeters between the upper and forearm, suggesting the patagium of a bird's wing. So far as a superficial examination can show the forearm has only one bone, presumably the radius for reasons to follow. The condition of the carpus bones cannot be determined though the narrowness of the wrist region would lead one to suppose that only one or two existed. One metacarpal and one two-jointed finger is all that represents the hand. This digit is probably a thumb, since two instead of three digital segments are present; it also approaches a thumb in size and possesses a wide flat nail. If this is the thumb I concluded that the forearm bone was more probably the radius than the ulnar.

Thus one of the forearm bones is absent and all of the hand except one metacarpal and the thumb. The point of particular interest is that both arms present exactly the same condition. Club or stump arms are commonly found but not of this peculiar type, and I have been unable to find any case recorded where both arms presented deformities identical in detail.

The parents were illiterate mountaineers and refused to permit a photograph to be made. I can only present a sketch which conveys an idea of the peculiar appearance of this monster (Fig. 1).

The father was about thirty-five years of age and had been weak and epileptic until he was twenty-five years old. He also used alcohol freely. The mother is well developed and healthy, and is in no way dissipated. They both claim never to have had a venereal disease. They have three other children, six, four, and two years old respectively, all normal in size and appearance.

It may seem futile to speculate as to the cause producing such a monster, but it is difficult to conceive how poor nutrition or defects in the placental arrangement could have caused the larger part of both hands to fail to form and yet have allowed the

thumb to develop. Evidence indicates that by far the larger proportion of monsters result from abnormal external conditions acting on the developing embryo. This case of arm deformity, however, would seem rather to be classed as a variation or sport resulting from an unusual germ cell probably derived from the father, and possibly due to his weak physical condition or inebriate practices which would tend to cause his germ cells to be surrounded by an unusual chemical environment. There is much experimental evidence favoring such a supposition.

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## TWO CASES OF TUBAL PREGNANCY.\*

BY

A. LAPHORN SMITH, B. A., M. D., M. R. C. S. (England),

Fellow of the American, British, and Italian Gynecological Societies, Surgeon-in-chief of the Samaritan Hospital for Women; Gynecologist to the Western Hospital and to the Montreal Dispensary.  
Montreal, Canada.

IN the aggregate many thousands of lives have been snatched from death by the early operation for ruptured tubal pregnancy. Many thousands more might be saved if the family doctor would keep on the lookout for these cases and if the moment he suspects the presence of this terrible danger in a woman under his care he would call in the help of a specialist to decide the momentous questions of diagnosis and treatment. One of the best means of increasing the number of physicians who can detect this obscure condition is for the specialist to report every case as it occurs and to give the symptoms before, and the findings at the operation. By this means alone the writer has trained some twenty or thirty of his medical friends to keep on the lookout for tubal pregnancy and appendicitis. Some of the older ones, like Dr. Sylvester, have sent me nine cases already diagnosed, Dr. Warren has sent me five or six, and Dr. Johnson and Dr. G. T. Rose have each sent me three or four. Other younger ones have diagnosed one or two; while another group of still younger ones, while not able to diagnose tubal pregnancy, are able to *suspect* something wrong and send them to me for diagnosis and operation. Most of these latter suspect appendicitis. Of course if their treatment of appendicitis were the rest cure, it would be a terrible mistake to leave a woman for nine days with a hemorrhage going on in the abdomen. But as their conception of appendicitis is removal of the appendix which entails the opening of the abdomen, it makes very little difference whether they make an exact diagnosis or not; the only important

\* Read before the Medico-Chirurgical Society of Montreal, Feb. 4, 1910.

thing about it being to *suspect* one of these two things and to rush the abdominal surgeon there without an hour's unnecessary delay.

I do not consider it any disgrace even for myself who have operated on fifty-one cases of tubal pregnancy with three deaths to have opened fifteen other women for tubal pregnancy and found something else. These were fifteen mistakes that I am very proud of because in each and every one of them a life was saved which otherwise would almost surely have been lost. One, for instance, was a twisted ovarian cyst with a hemorrhage of half a gallon of blood into it, giving all the symptoms of some terrible catastrophe going on in the abdomen. Others, again, were cases of leaking tuboovarian abscesses sufficiently serious to give a low temperature and a high pulse. While several others were cases of gangrenous appendix which on one pretext or another might have been dallied with had I not suspected ruptured tubal pregnancy. I have seen so many patients die, and some of them were in my own practice, from waiting for an exact diagnosis that I have become bitterly prejudiced against this excuse for delay. When a woman appears to be dying from intraabdominal hemorrhage, let us save her life first and make the diagnosis afterward. Let us open the abdomen to tie the bleeding vessels, and the diagnosis will be made beyond the shadow of a doubt almost before we have cut through the peritoneum. I feel the more justified in taking this stand because in many of my cases it would have been impossible to make a correct diagnosis before the abdomen was opened. I am, therefore, constantly telling my younger friends, "Make yourselves experts in the bimanual palpation of the pelvic contents, so that nothing abnormal can escape you; and if you find something which should not be there, get it out before it has time to become dangerously large." By taking this stand myself I have been able to do easily what Lawson Tait claimed could never be done—remove a tubal pregnancy before rupture. I have had several such, but the most interesting one was a woman who had been ten years sterile and whom I had been treating for several weeks for salpingitis. She came one Monday with an almost cured inflammation of her left tube, and on the following Thursday that tube was pregnant; the following Monday it was as big as my little finger; the next week as big as my first finger; the third Monday it was as big as a sausage, and two days later it was removed before rupture by vaginal section, and the

woman recovered very quickly. This was the only one of the fifty-one I ever did by this route, feeling as I did that I was taking fearful chances if a furious hemorrhage should start up.

It must not be supposed from the above remarks that I am utterly opposed to an exact diagnosis being made. After you have called the ambulance to take the patient to the hospital or while you are waiting for the specialist to be rushed to the home for consultation, you cannot employ the time better than in trying to make the most exact diagnosis possible. It certainly is a feather in the young doctor's cap if when the older man comes the younger one is able to say, "I suspect a tubal pregnancy for the following reasons." But what I object to is waiting until to-morrow or next week to make the diagnosis. When an open artery is pumping blood into the peritoneal cavity, that is no time for splitting hairs as to which exact spot the hemorrhage is located at.

Moreover, for well-known reasons it is in some cases impossible to say what it is for at least five times the appendix has been found buried in adhesions, so that the two doctors who were called in one of these cases were both right, although they each said a different thing.

CASE I.—Mrs. G., æt. thirty-four, began to menstruate at twelve and continued to do so normally until her marriage at twenty-two and after, for she has never been pregnant before, although married twelve years. For the first time she missed her period due on the fifteenth of July. Ten days later, on the twenty-fifth of July, she was washing all day, and that night she began to bleed and to have terrible cramps in her right side. Dr. McGovern was sent for, and as she had great tenderness all over the abdomen, he diagnosed appendicitis, and sent her to the Hotel Dieu in the ambulance. There she remained nine days, being treated with ice bags on the abdomen. As the pain was much better she came home, but continued to flow until the seventeenth of August when Dr. McGovern sent her to my service at the Western Hospital. On examining her I found a large mass on her right side pushing the small uterus over to the left. I had no hesitation in diagnosing it as tubal pregnancy with possible appendicitis, basing my opinion on the irregular hemorrhage lasting twenty-three days. The abdomen was opened, but before going through the peritoneum, we could all see the black blood showing through. About two quarts of clots were removed, as well as the ruptured pregnant right tube, and cystic ovary and densely adherent appendix. She made a good recovery; highest temperature 100°, highest pulse 98; and she went home on the twenty-first day.

CASE II (for the accurate history of this case I am indebted

to Dr. J. Heagherty, of Montreal).—Mrs. F., æt. thirty, was admitted to the Gynecological Ward of the Western Hospital on the eleventh of September, 1909. She had first menstruated at sixteen, and was always regular and normal. She was married at twenty-four; had one child born dead two years ago, and one miscarriage last New Year's day. On August 15, 1909, when, as she thought, she was one month pregnant, she was taken with a sharp pain in the abdomen, followed by a slight bloody discharge, both of which she attributed to an abortion, although the pain was different from her other miscarriages. Dr. Heagherty found her with a temperature of  $100\frac{1}{5}^{\circ}$  and a pulse of 100, and gave her a hypodermic of morphia. Next day she was nearly well again, but on the twenty-sixth of August she called at his office saying that the bloody discharge had never completely stopped. She was feeling very weak. As Dr. Heagherty was away on his holidays, he did not see her again until the eleventh of September, when she told him that on the fourth of September she had been taken with a sudden sharp stabbing pain on the left side radiating to the back, with hemorrhage and weakness. The physician who saw her in his absence gave her ergot and applied a fly blister over left ovary, after which the pain and hemorrhage ceased for a week. But as they returned on the eleventh, Dr. Heagherty sent her into the hospital.

Unfortunately, that was a Saturday afternoon and I was in the country for the week end, so the chief house surgeon exercised his privilege and curretted her. On my return, on Monday morning, I examined her and, finding a mass the size of an orange in the left vaginal fornix, I told him that I feared he had been curetting a *tubal pregnancy*. I let her go home on the eighteenth after fully explaining to her what a tubal pregnancy was and urging her to tell everybody in the house that should she be taken with a sudden unconsciousness, they were to call the ambulance and send her back to me for immediate operation. On the twenty-first of September Dr. Heagherty was again called for pain and hemorrhage and inability to urinate owing to distention. He passed the catheter and then he examined her and felt a large mass on left side. Hot fomentations and saline purgatives relieved the distention. He saw her daily, her temperature being around  $99\frac{1}{2}^{\circ}$  and pulse 80, and she felt well apart from occasional sweating and abdominal distention. However, he thought it better that she should be operated on and sent her to me at the Samaritan Hospital for Women on the eleventh of October, and next day, the twelfth, the abdomen was opened, and this specimen was removed together with a full quart of clots; I also removed the left ovary, and the vermiform appendix, as it was very swollen and adherent. But I left the right ovary and tube intact. Highest temperature,  $100^{\circ}$ . She made a good recovery and went home in twenty-eight days.

## COLPOCELIOTOMY AND ITS PLACE IN PELVIC SURGERY.\*

BY  
K. I. SANES, M. D.,  
Pittsburgh, Pa.

IN pelvic surgery both the abdominal and vaginal routes have their distinct fields of usefulness; a gynecologist, therefore, must be both a ventroceliotomist and colpoceliotomist.

*Shortcomings of the Abdominal Route.*—While the general applications of asepsis and the development of abdominal operative technic has greatly reduced the mortality in ventroceliotomy, we still meet in pelvic surgery postoperative complications directly attributable to the use of the abdominal route.

Sepsis in ventroceliotomies is a complication occurring occasionally even in the hands of most careful gynecologists. The reason for it is not difficult to find. The abdominal cavity is exposed to air, which may be septic; the clean abdominal viscera must be handled while operating in the pelvic cavity; the pelvic organs must be brought up into the general peritoneal cavity for their correction or removal, and the accumulated wound secretions as well as contents of accidentally ruptured septic tumors must be carried off through the abdominal incision. Such procedures, of course, favor peritoneal infection, and, while with perfect technic, it should seldom occur, it does occur nevertheless, because, while we always strive at perfect technic we do not always attain it.

Not only does the ventroceliotomy expose the patient to the danger of peritoneal infection, but it also adds a great deal to the degree of operative shock. The exposure to air of the peritoneal cavity, the disturbance of its viscera by hands, sponges, and instruments, together with the deep anesthesia necessary for complete relaxation of the abdominal wall, are additional dangerous shock-factors peculiar to ventroceliotomy.

Among the other serious disadvantages of ventroceliotomy are the gastrointestinal complications. As results of the exposure and handling of the abdominal viscera, intestinal paresis, ileus, acute gastric dilatation, and intestinal adhesions occur

\* Read before the College of Physicians of Pittsburgh, Pa., Oct. 14, 1909.

frequently enough to be important causes of postoperative discomfort, morbidity, and even death.

To these most important postoperative complications of the ventroceliotomy should be added the ventral hernia. It is true that with careful closure and primary union, ventral hernia should not occur, but we sometimes fail to get primary union and even in cases in which we do get primary union, postoperative hernias occur (in spite of careful closure of the incision). This is especially noticed in women with weak abdominal walls, and in the poorer classes of patients that are compelled to resume hard work early after operation.

With such disadvantages of ventroceliotomy is it any wonder that colpoceliotomy should have been proposed to the profession and that it should have found many followers among the gynecologists?

Now let us take up the colpoceliotomy, investigate its advantages and disadvantages, and then define, if possible, its indications in pelvic surgery.

*Advantages of Colpoceliotomy.*—Colpoceliotomy does away to a very large degree with the above cited disadvantages of ventroceliotomy. It reduces greatly the risk of peritoneal infection because the general peritoneal cavity and its viscera are neither exposed to the air nor disturbed; because during the operation the wound secretions and septic contents of the pelvis are safely carried off through the vaginal incision, and because postoperative drainage if required can be easily and safely established in a most natural and most effective manner.

Nor is the severe shock, the other cause of postoperative mortality in ventroceliotomy, common in colpoceliotomy. The reasons for this are easily understood. The general peritoneal cavity is not entered, and therefore is not disturbed nor cooled; the anesthesia need not be profound, because the exposure of the pelvic organs through the vaginal incision does not require complete muscular relaxation; the time of the operation in a large number of cases is shorter, because the incision consumes but little time and because both the preliminary extraperitoneal operations, such as curettement, and the intraperitoneal operations proper, are performed in one field, thus saving the time required for changing the patient's position, preparing the abdominal field, etc.

The other important complication of ventroceliotomy, the postoperative hernia, is not met with in colpoceliotomy, there

being no ventral incision, and the vaginal incision not favoring any hernia formation.

Not only does the colpoceliotomy avoid the serious disadvantages of ventroceliotomy, but it gives us a smoother and shorter convalescence. A patient after a colpoceliotomy does not suffer as much as she does after a ventroceliotomy, because the postoperative discomforts common after ventroceliotomy, such as pains and gastrointestinal disturbances, are either mild or entirely absent. Nor does the patient need to be confined to bed as long as she does after a ventroceliotomy. Even drainage cases may with advantage be allowed out of bed early, because better pelvic drainage can be obtained in the sitting or standing, than in the recumbent posture. It is true that quite a number of surgeons allow favorable ventroceliotomies out of bed early, but the profession at large has not adapted this practice, and in abdominal drainage cases such practice is out of question.

Again, the ability of the patient to resume her usual duties is regained earlier after colpoceliotomy than after ventroceliotomy—an advantage which is of great economic value to the poorer classes of patients.

There is another advantage of colpoceliotomy that may be mentioned here, though this advantage is purely "psychical." People have a horror for abdominal section; if a choice is possible they always prefer the vaginal route. In fact, it is not uncommon to meet patients who readily consent to a colpoceliotomy, but who absolutely refuse to undergo a ventroceliotomy.

We can see from the above that the colpoceliotomy reduces the postoperative shock, lessens the chances of sepsis, shortens and lightens the convalescence, avoids danger of traumatic adhesions, and does away with postoperative hernias.

*Disadvantages of Colpoceliotomy.*—Having such advantages over the ventroceliotomy, why is the colpoceliotomy not generally practised in pelvic surgery? The answer to this question is found in the limited accessibility of intraperitoneal lesions through the vaginal route.

The vaginal incision is for anatomical reasons more limited than abdominal. While the length of the abdominal incision can be made in accordance with the needs of the operation, the vaginal incision cannot.

The vagina itself, if small, as in some nulliparæ, or atrophied and unyielding, as in some women past menopause, narrows the

operative field to such an extent as to make access to the pelvic organs difficult and sometimes impossible.

And even with a roomy vagina and with an incision large enough for the pelvic lesion, colpoceliotomy is frequently impracticable. To remove or correct a pathological condition in the uterus or its adnexa, it is necessary to bring the diseased parts out into the vagina. When, therefore, the uterus and adnexa are found completely or partially fixed by firm adhesions or by contracted ligaments, their delivery through the vaginal incision is either impossible or unsafe.

Again the frequency with which we meet in pelvic cases concomitant diseases of abdominal organs, especially those of the appendix, gall-bladder and bowels, makes it imperative to examine these organs during our pelvic operations. Through the vaginal incision these organs can neither be inspected nor reached, therefore the pelvic work through the vagina must at times be incomplete.

While the objection based on the difficulties met with in inaccessible cases is seemingly well founded, it can have no weight with the great majority of those favoring the colpoceliotomies, who exclude these inaccessible cases from the vaginal route. Such operators do not attack through the vagina cases which have a suspicious history of coexisting appendix or gall-bladder diseases, unless the pelvic condition demands immediate attention and a ventroceliotomy is at the time contraindicated; they do not use the vaginal route for badly adherent pelvic organs unless they feel reasonably sure that the adhesions can be safely and easily severed; they do not perform colpoceliotomies for tumors that are too large to be delivered through a vaginal incision, unless they can, prior to their delivery, safely reduce their size.

It is true that cases to all appearances favorable for colpoceliotomy may occasionally turn out unfavorable during the operation, but careful preoperative study and examination of cases make such occurrences exceedingly rare, and if the operator takes the precaution to have all his colpoceliotomy cases prepared at the same time for ventroceliotomy and to obtain from such patients consent to be ventroceliotomized, should it, contrary to all reasonable expectations, be found unavoidable, the occasional failure can be of no serious consequence. The operation can be finished by ventroceliotomy and the vaginal incision may be either closed or used for drainage purposes, de-

pending on the character of the lesions and the kind of the incision.

But we hear frequently objections to colpoceliotomy, even in the accessible cases; such objections being the uncertainty of hemostasis, the necessity of working in the dark, and the difficulty of disinfecting of vaginal field.

So far as the "uncertainty of hemostasis" is concerned, we can easily overcome it by ordinary care. It is true that in colpoceliotomy, on account of the greater traction on tissues during ligation, the liability for tissue retraction with consequent hemorrhage is greater than in ventroceliotomy, but if we relax the hold on the tissue while we ligate, if we avoid including too much tissue in the grasp of one ligature, if we divide the ligated part at a distance from and parallel with the ligature, if we avoid pulling on the ligature during the operation and examine all the stumps at the end of the operation; if we take all these ordinary precautions there should be no fear about the hemostasis.

As to the objection of "working in the dark" is concerned it does not hold good in cases in which the diseased parts can be brought out into the vagina, because in such cases a good exposure is easily obtained. The objection is only applicable to cases in which, on account of excessive size of the lesion, extensive adhesions, or contracted ligaments, the diseased parts cannot be delivered into the vagina, but such cases belong to the inaccessible class and should therefore be taken care of by the abdominal route.

The objection based on the "difficulty of disinfecting the vaginal canal" is not well founded. The best proof that the canal can be made satisfactorily aseptic lies in the well-known fact that stitch abscesses are by far not as common in the vaginal as they are in the abdominal incision.

*Indications for Colpoceliotomy.*—The colpoceliotomy, therefore, can safely and with great advantage be adapted in cases whose lesions are accessible through the vaginal route. But to get all its advantages and make it as widely applicable as possible, both the anterior and posterior colpoceliotomy must be made use of, as each has its own special advantages and limitations and therefore each has its own field of usefulness.

Let us now consider separately the indications for the anterior and posterior colpoceliotomy, as by doing so the indications of colpoceliotomy can be more clearly defined.

*Posterior Colpoceliotomy.*—The posterior incision admitting us to the most dependent part of the pelvic cavity is best adapted for cases demanding pelvic drainage. It is, therefore, applicable to any operation on the uterus and the adnexa that requires postoperative drainage, but is especially applicable to cases in which the pelvic drainage is the only surgical procedure demanded, whether the drainage be extraperitoneal, such as walled off pelvic exudates, hematomas, abscesses, sactosalpinges and broad ligament cysts, or intraperitoneal, such as septic pelvic peritonitis, tubercular peritonitis and early acute salpingitis.

Because of the easy access to the lower segment of the posterior uterine wall and to tumors situated low in the pelvis, the posterior incision is well adapted for the subserous or sessile fibroids of the lower uterine segment, for the accessible pedunculated fibroids, for the accessible ovarian cysts, hydrosalpinges and unruptured extrauterine pregnancies.

The perfect exposure of the lower pelvis through the posterior incision obtained easily with patient in Trendelenburg's position makes the posterior incision especially adapted for pelvic exploration. So safe, quick, easy and free from discomfort is this incision, that for exploratory purposes it finds a wide application in pelvic surgery. While its value as an exploratory incision is great in many pelvic diseases, its greatest value is found in cases of suspected unruptured ectopic pregnancy, because of the importance of early diagnosis in such cases.

*Anterior Colpoceliotomy.*—The anterior incision, on the other hand, while unfavorable for drainage purposes, admits us easily to the upper and anterior part of the pelvis, thus giving us a good access to the round ligaments, a satisfactory control over the infundibulo-pelvic ligaments and a perfect exposure of the uterus and adnexa.

Such incision, therefore, is not adapted to septic cases requiring drainage; but to clean cases requiring operative procedures on the round ligaments, on the fundus uteri, and on the adnexa, the anterior incision is excellently adapted. Through it we can correct favorable cases of retro-displacements of the uterus by shortening of round ligaments, if the patients are of child-bearing period, or by high vaginal fixation, when future pregnancies can be excluded; we can correct a prolapsus uteri with pronounced cystocele by intravaginal implantation of the uterus (Schauta-Wertheim operation); we can enucleate small fibroids in the

anterior and fundal part of uterus; we can remove small ovarian cysts; we can perform oophorectomies for induction of menopause and salpingectomies for induction of sterility.

Thus we readily see from the above how wide a field we cover in pelvic surgery by colpoceliotomy, utilizing the anterior or posterior incision as the case may require. This field is still enlarged by the vaginal hysterectomy where both the anterior and posterior incisions are made. The vaginal hysterectomy for uterine fibroids with extensive adhesions can be performed with the aid of bisection or morcellation. The vaginal hysterectomy with dissection of the ureters (Schuchardt's operation) finds a most ideal application in operable cases of carcinoma of cervix because it not only permits most extensive removal of the parametria but allows also continuous downward drainage during the operation.

*Conclusion.*—We called attention to the advantages of colpoceliotomy, showing that it lessens the danger of sepsis and shock, avoids postoperative adhesions and hernia, lightens the burden of convalescence, and permits earlier resumption of work. We discussed the limitations of colpoceliotomy and admitted its impracticability in cases of narrow vaginal canal, with pathological parts too large or too firmly fixed for delivery through a vaginal incision, and in cases complicated by abdominal lesions inaccessible through the vagina. We called attention also to the necessity of utilizing both the anterior and posterior route: the posterior for removal or drainage of pathological conditions low in the pelvis; the anterior route for operation on the round ligaments, on the anterior and fundal portions of the uterus, and on nonadherent or slightly adherent adnexa.

We did not intend in this paper to enter into a detailed discussion of the advantages of individual vaginal operations, nor did we intend to cite our statistics here. Our only aim was to show in a general way the place that colpoceliotomy should occupy in pelvic surgery.

PARK BUILDING.

EXTIRPATION OF THE UPPER PORTION OF RECTUM AND SIGMOID.<sup>1</sup>

BY  
THOMAS B. NOBLE, M. D.,  
Indianapolis, Ind.

(With three illustrations.)

ANYONE encountering a stricture in the upper segment of the rectum will not find much in our textbooks to make his attack clear or easy. Organic strictures of the rectum are now being operated by three distinct routes—perineal, sacral and abdominal, or by a combination of these. Strictures which can be met by the perineal operation are usually simple and insignificant as compared with those high in the rectum. These latter must be reached either by a suprapubic or sacral incision. In either case, the peritoneum must be invaded and an end-to-end anastomosis made deep in the pelvic cavity where, in the nature of things, such procedure becomes very difficult.

Everyone knows that it becomes necessary at times to establish an artificial outlet or anus at some point of election and everyone knows, as well, that the annoyances and discomforts following this makeshift, are anything but desirable. There is but one ideal result to be obtained in all of these cases, and that is an intact ventral wall and an intact colonic tube with functioning anal sphincters.

My personal experience is limited to four cases of this class, and in them I have been impressed with the advantages of the abdominal route over the sacral, and it is to emphasize this fact and the means employed, that I present this brief paper.

Mrs. W. is thirty-three years of age and has been married five years. She gave birth to twins four years ago. Her father died of pneumonia. Her mother is living but now is suffering with fibroid phthisis. Her mother's mother and two of her mother's sisters died of consumption. No malignant disease has existed in her relationship. This patient has had measles and chickenpox, but otherwise has enjoyed good health until the onset of present illness. Her first symptoms began in July,

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

1907, two years and two months ago, with suprapubic pains, periodical in character, lasting from two days to two weeks. These pains continued to recur in this region until the following January, when they were then referred to the rectum. On getting out of bed each morning she would be seized with a violent rectal tenesmus, to be followed by incontinence of gas and mucus, sometimes blood-stained. Later, pains sprang up in the left iliac and sacral regions. She now began the regular use of codeine and morphine, which she was taking in large doses at the time I first saw her. On about the thirtieth day of May, 1908, the patient submitted herself to a laparotomy at the hands of a very competent operator who, after direct examination, closed the abdomen with the judgment, expressed to the husband, that the case was inoperable and nothing could be done.

Following this operation, the patient went home and placed herself in the hands of an osteopath. This gentleman treated her seven months and pronounced her cured. But, *mirabile dictu*, she immediately went to bed and there had to remain. In January of this year, the patient was examined by another surgeon, who after a week's observation in one of our hospitals, sent her home again with no encouragement for further relief. So it fell to me to see this case during the latter part of April. I found the woman much emaciated, weighing ninety pounds. Her appetite was poor, liquid diet being taken, and bowels moving only by constant use of active cathartics and colonic flushings. The stools had to be kept in fluid form all the time. Temperature 99, pulse 110. Lungs showed no cough; no râles, no dullness, no expectoration. Heart—no hypertrophy, no dilatation, no dyspnea, cyanosis or edema. Urine had no sugar or albumin. Abdomen retracted and abdominal muscles tense. No tenderness or swellings on palpation. Uterus, tubes, and ovaries had no pathological changes.

The finger introduced into the rectum came upon a stricture, the lowest limits of which were as high as the finger could be carried. The stricture was now almost completely occluding the gut and was produced by some infiltrative growth, which involved the entire thickness as well as circumference of the bowel. The mucous membrane covered the growth as far as could be palpated. It was somewhat nodular, hard, very slightly movable, tender and caused exquisite pain in the back under sharp pressure. Through the vagina the same physical characters were observed as felt through the anus, the mass extending as

high as the fingers could be carried through the posterior vaginal fornix. The diagnosis lay between hyperplastic tubercular proctitis and cancer. She had been given large quantities of iodide of potassium.

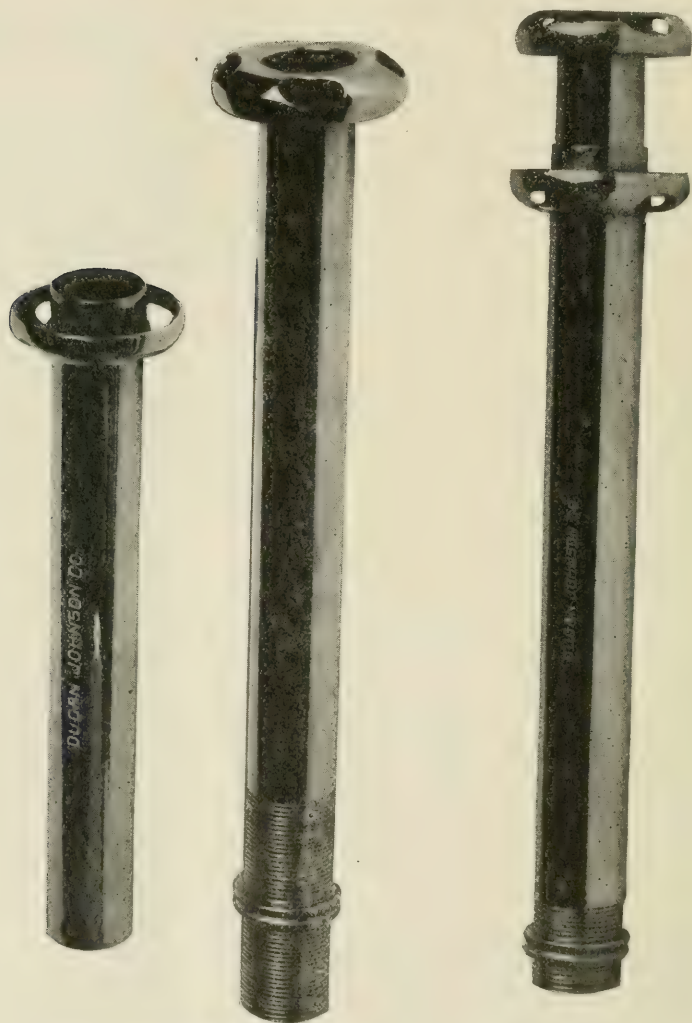
It was very evident that the patient could live but a short time without some operative interference. This she herself fully realized and was very anxious that something be done. It seemed that we had the choice of two courses to pursue—namely, an inguinal colostomy or complete extirpation of the growth with re-establishment of bowel function. Personally, I have never been much attracted to the operation of colostomy, and my experience with it has been only to continue suffering and discomfort. I would not be understood as entirely eliminating the operation, but would choose it only as the operation of last election.

The patient was anxious to have the growth removed and it seemed possible to me to do so, providing we could devise some way to make a quick and secure anastomosis. She was then removed to the Methodist Hospital and put on supportive treatment for one week, consisting chiefly of beef juice and strychnine.

During this time I had made an instrument, which I shall presently exhibit. It is composed of two tubes, seven inches in length by three-fourths inch in diameter. One tube fits closely within the other. On one end of the outer tube is brazed a concave collar half an inch in width, the concavity being directed away from the other end of the tube. On the same end of the inner tube is a like collar, with its concavity toward the concavity of the collar of the outer tube. On the other end of the inner tube threads are cut with a thumb screw to be screwed down against the same end of the outer tube. By turning this thumb screw, the collars at the other end are made to approach or separate from each other at the will of the operator.

The patient was now prepared for the operation, by having the abdomen, vulva, vagina and inner aspect of the thighs thoroughly scrubbed and sterilized. The anal sphincters were moderately dilated. The lower portion of abdomen and inner aspect of thighs were left uncovered—the thighs separated. The abdomen was now opened from symphysis to umbilicus. Trendelenburg's position showed three coils of small intestine and a process of omentum adherent, by inflammatory exudate, to rectal mass back of uterus; tubes and ovaries were free.

These coils were separated by finger dissection, one coil being so angulated as to necessitate the introduction of a McGraw ligature in anticipation of a possible obstruction.



Noble's anastomat open.

Noble's anastomat closed.

A transverse incision through Douglas's pouch into the vagina was next made. One end of a strip of gauze, three inches wide, was now carried down through the abdominal wound, on through the incision in Douglas's fossa, out through the vagina and the

two ends being brought together were tied by an ordinary knot in front of the pubes, under sufficient tension to cause the uterus, tubes, ovaries and bladder to hug closely the pubic arch. This procedure puts the utero-sacral ligaments under strong tension and brings the whole pelvic field into plain view and of easy access. The posterior wall of the vagina and the uterosacral ligaments were next dissected from the rectum, the ligaments marking the lower border of the rectal growth. No hemorrhage occurred during this dissection, which was done by the fingers alone. The rectum was then clamped well below the mass and cut off below the clamp, leaving about three inches and a half of the rectal tube below. The upper end of the rectum, including the growth and a considerable portion of the sigmoid—the whole measuring about twelve inches—were now cut away. Some of the lymph nodes in the mesocolon, leading from the lesion, were enlarged and these were also included in the excision. This necessitated the removal of a wedge-shaped section of mesentery, the apex of which reached close to the bifurcation of the aorta.

When the proximal segment of colon was brought down to the rectal segment, it was observed that acute angulation with tension, existed at the splenic flexure. This was overcome by slitting the peritoneal reflexion over that portion of the gut. Coaptation of the two ends could now be accomplished with ease. Purse-string sutures were run around the cut end of each segment. The above described instrument was next introduced through the rectum; the ends were tied down as in use of Murphy's button, and the thumb-screw tightened below, which approximated the ends perfectly, a few Lembert sutures being used for reinforcement. The raw area left by removal of the growth was covered by suture of the surrounding margins of peritoneum. A small vaginal drain was left, a rubber bag was placed over the lower end of the shaft of the instrument to catch the bowel discharges, and the abdomen then was closed. No more blood was lost during this operation than in an ordinary hysterectomy. There was but little shock, the symptoms at no time causing alarm. The colon was kept empty and clean by daily irrigations through the tube by means of a soft rubber catheter. The bobbin was passed on the twelfth day; the abdominal wound healed by primary union; and the patient has since gained thirty pounds in weight.

## PATHOLOGICAL REPORT FROM DR. F. B. WYNN.

I desire to offer the following pathological report upon the specimen you submitted to me for examination.

1. *Gross Specimen.*

This represents eight inches of exsected rectum and sigmoid flexure of the colon. The longitudinal section of the gut, reveals a growth within the viscus, which obliterated the lumen in the rectum, and extends upward about five inches. There is very slight gross evidence of invasion to the perirectal tissues. The muscular layers of the bowel are considerably hypertrophied.

2. *Microscopic Examination.*

Stained sections including the wall of the intestine and the growth show a large amount of dense fibrous connective tissue stroma, in which were variously shaped acini more or less completely filled with columnar or polygonal epithelium. Within the muscular layers, it was possible in a few places to find strings and small clumps of epithelial cells. Likewise, in one small lymph node in the intestinal wall, was found a clump of epithelial cells; but the amount of invasion into the muscular layers and beneath the peritoneum was surprisingly meager, considering the nature of the growth within the lumen. Diagnosis: scirrhus carcinoma.

I report this case in order that I may introduce an instrument which I feel confident will be helpful in cases of this kind. It possesses no new principle. It is only a result of the study and use of Murphy's button—the most ingenious device ever introduced into the abdomen. It has some advantages over the button here, in that it can be introduced quicker; serves as a splint to the soft parts; admits of irrigation of the colon and prevention of impaction; and by continuous drainage keeps the bowel quiet, thereby favoring prompt and perfect union. I believe it is a useful means to the ideal end—an intact abdomen, intact intestine, and competent anal sphincters.

MALIGNANT TUMOR OF UNDESCENDED TESTICLE.<sup>1</sup>

BY

O. G. PFAFF, M. D.,

Indianapolis, Ind.

(With one illustration.)

THE case here reported is that of a Mr. H——, who was referred to me by Dr. Holloway, of Knightstown, Ind. He was a Hebrew, thirty-eight years of age; born in Indiana; a florist by occupation; had been married several years and was the father of one child. His family history showed that his father had died of cancer of the gall-bladder and two of his father's sisters had died of cancer of the stomach. He had never been seriously ill; his bowels were regular and there was no history of any genitourinary disease.

About three months before I first saw him, he had for the first time complained of a point of soreness in the abdomen just below the umbilicus; shortly after this he discovered some unusual fulness in the painful region which subsequently increased very considerably and the pain became at times very severe, so that hypodermic injections of morphia were frequently resorted to for relief. His appetite and digestion remained fair, aside from certain attacks of acute indigestion and sick headache, which had been his occasional experience since childhood.

An interesting feature was that this man and his brother also presented the condition of undescended left testicle and coexisting left inguinal hernia, and in both instances frequent attacks of pain were experienced in the malposed organ. An examination disclosed a tumor the size of a fetal head, occupying the left lower abdomen and pelvis. The tumor was freely movable within moderate limits, but was apparently attached by a pedicle to a point near the internal inguinal ring.

The mass was considered to be a malignant tumor of the undescended left testicle and three days later the man came into St. Vincent's Hospital to have it removed by operation. Through an incision made to the left of the median line, the relationships of the mass were easily made out; the pedicle was attached at the internal ring, and there were some recent ad-

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

hesions to the bladder which were easily broken up, the pedicle ligated and the mass removed.

The man made an uneventful recovery from the operation, but within five months died of malignant disease. I never saw him after he left the hospital and did not learn as to the location of the later growth, other than that it seemed to affect both the bladder and the bowel. The microscopical examination of the growth showed it to be a large round celled sarcoma.



Sarcoma of undescended left testicle.

The literature on the subject of undescended testicle is not overabundant, but it is sufficient to point to the condition as one which is to be considered as very much more than a curious freak of nature, and one which calls for serious consideration when met with.

Wyeth reports an interesting case of sarcoma of an undescended testicle coupled with a small inguinal hernia of the same side; in this case five days after marriage the man began to suffer severe pain in the affected region; pronounced swelling of the painful structures ensued with considerable rise in temperature; the acute symptoms were controlled by applications of ice and shortly afterward the testicle was removed.

The case which is here reported related the same history of pain accompanying the sexual act. Also the man's brother having likewise an undescended testicle of the same side and associated hernia, complained similarly of severe pain on intercourse.

Boese, Heaton, and others have reported cases of strangulation of undescended testicle from twisting of the pedicle. Evidently we must consider that undescended testicle is not to be passed over as simply a tolerable nuisance, or as an unpleasant defect, but that it is a fairly painful condition and one which is a constant source of irritation and occasionally of active inflammation; twisting of the pedicle may occur in any given case with disastrous results. There is in addition, which must not be lost sight of, a recognized tendency toward the development of malignant disease in these malposed, compressed and irritated organs, and undoubtedly it is a surgical duty in every case of undescended testicle which refuses to be brought down into the scrotum, to remove the offending organ, thus putting an end to a painful and threatening disorder.

1337 NORTH PENNSYLVANIA STREET.

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## GANGRENE OF GALL-BLADDER.<sup>1</sup>

BY

MAGNUS A. TATE, M. D.,

Cincinnati, O.

IF statistics and a perusal of literature are trustworthy standards, gangrene of the gall-bladder can truly be classified as a very uncommon affection. Few typical cases have been reported and the histories of some of those recorded are very incomplete.

Cholecystitis, as we now understand it, is usually described as an inflammatory process, and from an etiological standpoint the factors responsible are mostly of microbic origin. In the virulent forms where the gall-bladder wall becomes necrotic, the ability to trace its etiology to some definite factor or factors is at least of interest, and along this line I present a case report and this short paper as one of inquiry.

Classifying bacteria in cholecystitis it has been found that the bacillus coli communis, bacillus typhosus, staphylococcus albus and aureus, streptococcus pyogenes, and the pneumococcus predominate. Peterson in his series of fifty operative cases for

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

gallstones found bacteria forty-six times as follows: the bacillus coli communis thirty-six, staphylococci six, and streptococci four times. Hartman in his series of forty-six cases found bacteria present in thirty-four; the bacillus coli communis in twenty-three, staphylococci in three and streptococci in two cases. Five of the thirty-four showed a mixed infection and in ten of this number the bile was found to be sterile. Deaver also made an analysis of fifty cases and reported bacilli twenty-nine times as follows: bacillus coli communis nineteen; typhoid bacillus six; staphylococci three; streptococcus one.

Grouping the above tables as given, we find that in 144 cases of cholecystitis, there were 107 cases traceable directly to microbic origin. It is reasonable to feel very sanguine that infection is the primary cause, but we are confronted with much doubt as to the route through which the infection is carried. It at least affords much speculation whether in given cases it is an ascending infection, starting from the duodenum traveling up and along the common to the cystic duct and then gaining entrance into the bladder itself, or whether it should be grouped as a descending infection entering by means of the vascular and lymphatic system of the gall-bladder. Whenever the alimentary canal above the ileocecal valve is filled with infectious material, as occurs in an acute appendicitis, it seems very possible that an infection through the common duct would be the natural sequence. Experimentally it was found that when the common duct was ligated, as performed by Miyaka, the gall-bladder was soon infected.

To support somewhat the latter view we know that in the finer branches of the portal system colon bacilli are often found, that a healthy liver destroys or attempts to destroy these bacteria, but in cases where the liver is not properly functioning, bacilli readily reach the bile in the gall-bladder. The colon bacillus usually limits its destructive work to the liver and does not as a usual thing extend beyond into the general circulation. Lymph vessels accompanying the portal and hepatic vessels constantly carry lymph from the liver, so the infection may readily reach the gall-bladder through these superficial lymphatics.

A stagnation of bile current and bacterial foci in the general circulation are factors which may account for some cases of infection of the gall-bladder. Our general conception of the septic qualities of bile has been, that if it be discharged into the abdominal cavity serious trouble is likely to ensue, but so many

cases are recorded where no serious symptoms supervened, we are forced to the conclusion that bile must not be looked upon as dangerous material in the majority of cases.

A question of great importance to all surgeons is—does a gall-bladder which is once diseased ever return to its normal condition? Can thorough drainage effect a perfect cure, or is removal imperative when a gall-bladder is once thoroughly infected and if once infected, is it not a source of constant danger? Experience has been a great teacher in the management of infected gall-bladder cases, and we are on the road to satisfactory surgery of this important part of the human economy. The period when gallstones form is usually some time after middle life, but we know that they have been found at any age.

It is very uncommon and considered somewhat of a pathological curiosity to find gallstones in the very young, but a number of cases are reported. For example, portal and Lieutand even report cases in the newborn and Walker in an infant of three months. Naunyn makes this statement, that every tenth human being has gallstones, while Kiel in his autopsy records made it 5 per cent. and Schroeder 12 per cent. They also found that after sixty years of age one out of every four showed gall-bladders to contain stones, and of this number one-fourth was in men and three-fourths in women. To be somewhat more specific, in 50 per cent. of the cases the patient is over fifty years of age, and when the age is given as twenty-five or under gallstones are uncommon.

It is so rare to find gallstones in young unmarried women, that Naunyn puts himself on record as saying that at least 90 per cent. of the cases occurring in women, were in those who were married, and from my limited observation this statement is correct. In 1892 Naunyn gives a report of his investigations and states that the epithelial cells within the gall-bladder give rise to the cholesterine found in the gallstones, and in pure cholesterine stones bacilli have been found which formed the nucleus. Mignot and Gilbert made a series of interesting experiments upon animals in order to produce in their gall-bladders, gallstones. They injected properly attenuated bacteria with the result, gallstones. Also they tied off the cystic duct then introduced some foreign body to which bacteria could cling with the result, gallstones in some five or six months, which was considered sufficient time to allow for their proper development.

Richardson in some cases where the bile became stagnated found enormous clumping of bacilli, and he suggested that these little groups of clumping matter might be the starting-point for the formation of a stone. He also states that in some instances when gallstones are formed, they may have absolutely no influence in the production of an infection by their presence, but only indicate abnormal condition of the bile. In cases of cholecystitis one cannot but be struck with the very remarkable frequency of a pre-existing typhoid. Cushing found that in thirty-one cases of cholecystitis operated upon at Johns Hopkins Hospital, ten had a previous history of typhoid fever.

All evidences point to the infection coming through the blood in cases of typhoid fever and whenever a pure culture was made of the contents of the gall-bladder, the typhoid bacillus was nearly always found. Chiari examined the gall-bladder of twenty-two cases who had died of typhoid and found the bacillus nineteen times. This statement has been made lately and not contradicted—namely, that cholecystitis rarely if ever occurs in one who has not had typhoid fever. Cushing experimented upon the gall-bladder of dogs introducing the typhoid bacillus directly into the bladder, but the bile had a destructive influence upon the bacilli for, at the end of twenty-four hours, they could not be found. Gilbert and Girode by their experiments found in 1890 that the typhoid bacillus had a suppurative action, that when the pus obtained was examined it was found to contain the typhoid bacillus.

Whenever the infection is of a virulent character and there is some obstruction to the flow of bile, pus soon forms and unless drainage is established a perforation will result, and an infection of the peritoneum will rapidly follow. If a stone be so lodged or so fixed that it forms an obstruction in the presence of a virulent infection, and is not dislodged or removed, the gall-bladder will become gangrenous. Again, if the gall-bladder be blocked say in the cystic duct a hydrops will follow and may remain so for some time, but if it be infected an empyema results.

If the case be an acute virulent suppurative inflammation, the gall-bladder walls become enlarged and softened, sometimes markedly so and its color changes from a dark red to a green. Naturally many adhesions will form to the surrounding organs. The mucous membrane is destroyed and ulceration occurs usually at or near the fundus with, in many cases, a resultant peritonitis, or a perforation may take place into the

stomach or intestines. In the so-called gangrenous or phlegmonous form, the destruction of the walls of the gall-bladder may be very rapid. The following case of gangrenous gall-bladder presents many interesting features.

Mrs. — referred by Dr. Wm. Johnson. Age, fifty-three. Looked like a woman of seventy. Was of the unintelligent class and even the following incomplete short history was obtained with difficulty. Has had a number of attacks of fever with violent pains in upper right side, but none so pronounced as the present attack which has lasted about a month, hence her reason for seeking aid. Mother of four children—married twenty-eight years; has had the diseases of childhood, also typhoid at the age of twenty-six, pneumonia at age of forty-two, and from the latter disease claimed she had never fully recovered. Appearance like that of a malignant cachexia. Slightly jaundiced, very thin, and facial expression that of a chronic sufferer. Complained bitterly of pain in gall-bladder region; constipated for years but now had a septic diarrhea. Appetite very poor, in fact refused food for a number of days as she claimed it passed through undigested. Temperature  $101^{\circ}$ , pulse 130. Some muscular rigidity but not pronounced, and a small mass the size of an egg could be distinctly felt. Patient's condition would hardly allow an immediate operation so she was removed to hospital, stimulated for two days. There being little or no improvement it did not seem wise to defer operation any longer.

Incision revealed a matted condition of the intestines, adhesions numerous and all landmarks utterly destroyed. Upon careful separation over gall-bladder region I came upon a number of little pockets of pus and a black mass, which upon gently liberating proved to be the gall-bladder. Upon traction its walls gave way very readily and underneath was a large stone now crumbled into many fragments, mixed with pus and bile. The field was carefully mopped dry no more adhesions disturbed, an extra large rubber drainage tube inserted and stitched into that part of mass which I judged to be about the location for the duct. No discharge appeared for twenty-four hours other than a little bile-stained serum, which in another twenty-four hours became mixed with pus; at the beginning of the fourth day bile and pus was draining in large amounts through the tube. The temperature and pulse became normal the fourth day. The diarrhea ceased, appetite improved and the patient left hospital in three weeks in fair condition except for a fistula which re-

mained open. The jaundice gradually became lighter but never entirely disappeared.

Two years afterward I heard the patient was up and around doing household duties, but the fistulous tract remained open, and at present time as far as I know her condition remains unchanged.

19 WEST SEVENTH STREET.

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## RETRODEVIATIONS OF THE UTERUS AND THEIR MEDICAL AND SURGICAL TREATMENT.<sup>1</sup>

BY

GORDON K. DICKINSON, M. D.,

Jersey City, N. J.

AN ancient Egyptian sage more than four thousand years B. C. wrote:

"Would that I had words that are unknown, utterances that are strange, expressed in new language that has never occurred before, void of repetitions: not the utterances of past speech, spoken by the ancestors. I squeeze out of my body for that which is in it, in the loosing of all that I say. For what has been said is repeated, when what has been said has been said."

The sentiment expressed in the above quotation is an apology for writing on that which has become commonplace, but "principles require constant revision and consideration," and perhaps the writer may be able to illuminate at least one point.

Retrodeviations of the uterus have been much studied and much discussed by the profession and, although our information as to the anatomy and physiology of the pelvic organs has been thoroughly investigated and is well comprehended, nevertheless, the true broad pathology of retrodeviations does not seem to be entirely understood by the gynecologist of average mind. The very fact that surgeons of eminence as yet disagree as to the best method of giving relief from the distresses incident to this condition, is full and complete evidence of some lack in therapeutics. It has become almost an axiom that where many drugs are recommended for the cure and relief of disease there is no panacea. Perhaps the error has crept in, as is not uncommon with the modern physician, by his focusing attention on an irregularity, forgetful of the known sympathy of tissues.

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

We have three stages in diagnostics: clinical history, physical examination, and laboratory determination. One or all of these may be of service in every examination. The tendency of the average mind is to do that which requires the least effort on its part. When a woman presents herself to the physician complaining of the uterine syndrome, examination is made, retroflexion easily discovered, and further efforts in diagnosing cease, operation being ordered.

It is as important in retrodeviations as in, for instance, diseases of the stomach, that all known anatomic and physiologic causes for its existence and for associate symptoms should be considered. The co-existence of several causative conditions should be taken into account: the physiology of the uterus and its adnexa, and, not the least important, the interdependence of complications arising from or co-existing with the deviation, which affect other important structures. Not until these have been considered and their importance in the production of discomfort estimated in each individual case is it wise to proceed with therapeutic measures.

The uterus has a normal position, but not a normal direction. It has become a matter of fiction to state a norm in our literature. Such does not and cannot exist, but there is a normal relation to surrounding parts. One must recollect that the position of the uterus is one thing and its inclination another. Deviations of the fundus have a different anatomic pathology from changes in position of the uterus. The normal uterus is movable within prescribed limits, and to functionate properly it should be movable. It should have a proper possibility of excursion up and down. The body of the uterus should be able to move with changes in the size of the bladder and at times of impregnation. Respiration and exercise also demand elasticity in its supports.

The uterus is held in position by no one structure, but by a most delicate coordination in the action of several structures. None of these are strongly fibrous and none are inelastic. Like the other abdominal viscera, its most important support is its meso, inappropriately termed the broad ligament. In addition to the broad ligament, there are several bundles of muscular tissue extending from the uterus and morphologically continuous with it. A bundle of this tissue extends from the fundus of the uterus to the inguinal rings which, by their tonus, aid in holding the fundus toward the anterior abdominal wall, at the same time being attached rather distal of the mesial line, keeping the

fundus of the uterus free from lateral movement. In the base of the broad ligament muscular tissues extend to the pubic bone. These fibers are not abundant nor of great importance. Another bundle runs posteriorly and laterally to the sacrum from the cervix. This utero-sacral muscle, with its contiguous peritoneal fold, is the first to feel the effect of any descensus of the uterus. Such is its potential value that with many it is considered the most important uterine ligament.

The cervical portion of the uterus anteriorly is firmly attached to the bladder. The posterior wall of the vagina being longer than the anterior, the uterus enters it at an angle, thus inhibiting prolapse tendencies. We can now see that the position of the uterus will depend upon all of these several factors. A defect in any one will affect its position. In fact, it is rare for the uterus to be pathologically displaced without defect in more than one of these important structures. The integrity of the perineum, also of the pelvic diaphragm, size of the vagina, and condition of the parametrial cellular tissue regulate the *position* of the uterus. The tonus of the uterosacral muscle, condition of the broad ligament, and, in a minor degree, the condition of the other ligaments will influence the *direction* of the uterus. Antenatal conditions lead to defects in development, which largely predispose not only to malposition, but to distressing complications.

Extraneous causes for this condition are not uncommon. Particularly potent is the ballooned cecum, which with an accumulation of heavy fecal material may pound the uterus in spite of a proper condition of its supports. Likewise, a pendant overloaded transverse colon.

The relative value of these supporting agents to the uterus can be estimated by a forcible dragging down of the cervix into the vagina. The first tissue to resist will be the uterosacral muscle, and when that is divided, the next resistance will be produced by the broad ligament. Division of this throws the support upon the parametrium in the neighborhood of the uterine artery, the round ligament even then not being on tension.

Posterior displacements of the uterus have no symptomatology *per se*, and not until they become associated with some lesion of surplus tension, some disturbance of circulation, or exhaustion of the sympathetic is distress felt. It is here that we see the determining factor of "the way one is constituted." A woman well-developed, with good nerve tone, whose cardiovascular

apparatus is without defect, whose nature it is not to think of her ills, will find little distress from the deviation. Others fairly as well put together will only become conscious of it when tired and exhausted by work or worry, but a woman of poor nerve tone and hysterical temperament, whose vasomotor apparatus is not sturdy, whose sympathetic easily plays to reflexes, with perhaps some antenatal defect, will complain considerably.

The uterine syndrome, bearing down, backache, pains in the thighs, quick tire on locomotion and psychic disturbances, is induced by any of the noninflammatory lesions of the pelvis. Some say that retroflexions produce disturbances in the circulation of the uterus and congestions, but the uterus is never seen to change in color as deviations are induced or relieved. Certainly the circle of Robinson is so perfect and anastomoses so complete and numerous that it would be difficult to induce any marked congestion by a retroflexion.

In the parametrium is a certain amount of erectile tissue, engorgement of which, if continuous, may be sufficient to induce more or less persistent distress. A slight descensus of the uterus can produce contractions of the uterosacral muscle and give pain. Dragging on the uterine meso is another source of distress. Pressure of the fundus against the rectum or against the sympathetic ganglia in the pelvis may also be productive of disturbances.

Dysmenorrhea, sterility, and dyspareunia are more prone to be due to some antenatal defect. The constipation associated with retroflexion cannot be considered in the relation of cause and effect, for women are notoriously careless in this matter, failing to maintain a proper reflex irritability of the defecation center through want of habit. Backache is entirely a neurasthenic pain, and he is a bold surgeon who will guarantee relief by operative measures.

It is thus seen that distresses associated with uterine malposition are not local. We have no local tenderness. We have no local changes. The pathology is simply that of its contiguous nervous system, and in thinking out a treatment it must be recollected that the uterus is more than a muscular apparatus. It contains in its substance microscopic ganglia resembling those found in the heart and intestines. Through the parametrium it is in a large degree connected with the ganglia of the sympathetic system in the pelvis, from which ganglia nerves pass to the urinary and intestinal tracts. The pelvic sympathetic system is the "executive apparatus" of the pelvic organs.

More nerves depart from it than are received, suggesting that it is an "originating center." It is connected with the first, second, third, and fourth sacral nerves, and through the branches of the pneumogastric it may send reflexes even to the respiratory center.

The blood supply of the uterus and adnexa is controlled by the vasomotor nerves originating from this sympathetic plexus. The internal secretion of the ovaries has a special selective effect upon the vasomotor system of the pelvic organs. Any antenatal anatomic or physiologic defect in development will be shown by irregular functioning of the nervous and muscular tissue.

According as a person is constituted so will there be reflex disturbance from the conditions which may complicate retroflexion. Treatment demands that there be full recognition of possible tension on the fibers of the broad ligament and its contained nerves, of undue strain on the uterosacral muscle, of disturbed vasomotor tone of the pelvic organs, and of the numerous reflexes through the sympathetic—constipation, nervous dyspepsia, asthma, hyperesthesia, destruction of blood corpuscles, and stercoræmia through retention of fecal matter. This means that treatment shall not be entirely surgical. We must treat the individual and not alone the womb; by improving the nerve tone, particularly local nerve tone, by massage of the lumbar region and the tonic effect of cold applications, control of intestinal hemolysis by natural action of bowels, not through laxatives, and increasing the hemoglobin. Cardiovascular tonics are called for and have a decidedly beneficial action.

Operative interference is necessary in the majority of cases, but not in all. The reason that all methods of operation have their failures is because they are all artificial. If any one ligament or any one tissue were always at fault, then to treat it would be reasonable and uniformly successful. If, after careful examination, it be discovered that the position of the uterus is abnormal, the perineum, pelvic floor, and vagina should be properly repaired. If the uterosacral muscles through prolonged tension or disease have become atrophied, their shortening may be indicated, although this operation is sometimes followed by a tender cicatrix which will continue the symptom-complex even though the position of the uterus be rectified.

Implantation of the bladder upon the anterior surface or fundus of the uterus will sustain the uterus in a more normal direction. Shortening of the round ligaments for a too movable uterus, not a descended one, has been advised by many surgeons

with the most happy results. According to the skill and bias of the operator so will he select one or the other. By a posterior colpotomy he may easily determine the presence of adhesions and can separate the majority of them with safety. This will allow of a shortening of the round ligaments at their weakest part by an entrance into the inguinal canal through the fascia of the external oblique.

The object of this paper is not to discuss the five-score methods of surgical procedure. It is mainly to call attention to the importance of treating the woman as well as the uterus.

280 MONTGOMERY STREET.

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## AN OPERATION FOR CYSTOCELE THAT HAS GIVEN SATISFACTORY RESULTS.<sup>1</sup>

BY

FRANCIS REDER, M. D.,

St. Louis, Mo.

(With seven illustrations.)

SOME years ago, while a visitor at one of the gynecological clinics in an eastern city, the surgeon remarked that the operation for cystocele has so often resulted in failure that it has been abandoned by some operators and discouraged by others. I failed to realize the gravity of his remark as I watched with great admiration the operator's technical skill and looked upon the completed work with a sense of satisfaction engendered by the confidence that such work instills into an enthusiast.

When the occasion presented itself to approach the surgeon with the question if he was satisfied with the operative measures he had carried out for the cure of the cystocele, he remarked: "Temporary relief is certain; as to the permanency of a cure there remains an element of doubt." I was very much impressed with this frank statement as I had expected a somewhat different reply after such a splendid technic with a finished work that reflected the greatest stability.

Ten years have since elapsed. My experience with the various technics for the correction of a cystocele has been such that the remarks of the eastern surgeon were brought back to me. It can be said that recurrences in corrected cystoceles are quite frequent and that no particular technic will promise a permanent cure. I have operated on patients of my colleagues which they had

<sup>1</sup> Read at the Twenty-second Annual Meeting of the American Association of Obstetricians and Gynecologists at Fort Wayne, September 21-23, 1909.

pronounced cured, and I know that some of my "successful cases" drifted into other hands and had to be looked after again.

It cannot be said of the failures that they were wholly due to a faulty technic; instead I would rather say that an incomplete technic was the cause. It can be readily appreciated how difficult it is to cure a cystocele when we consider the anatomy of the vaginal tract, its relationship to the pelvic structures, and the physiological causes to which the formation of a cystocele can be attributed. I can assign my failures possibly to three



FIG. 1.—Cystocele as usually met with.

factors, namely: (a) not properly attending to the urethrocele, a hypertrophied tract of vaginal tissue immediately behind the external urethral orifice, very prominent in all my cases when recurrence has taken place. A urethrocele, no matter how small, can be the starting-point of a cystocele and its principle can be readily compared to the principle of any beginning hernia. Furthermore, if such a protrusion of vaginal tissue is not properly obliterated during a cystocele operation, it may, through its wedge-like impact upon the repaired perineum, gradually weaken this important structure and eventually cause a recurrence of

the former trouble. (b) Neglect to loosen the bladder sufficiently from its anterior uterine attachment. (c) Failure to construct a pelvic floor adequate to give the proper support to the anterior vaginal wall.

An essential factor to a successful operation is the denudation necessary on the anterior wall. No fixed rules can be laid down as to the amount of tissue to be removed for the reduction of the hernia, nor can any definite principle be adhered to whereby the

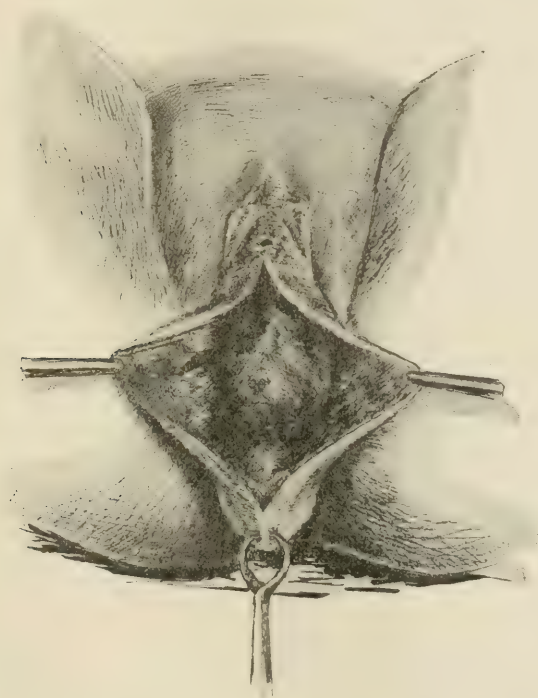


FIG. 2.—Separation of bladder from vaginal wall.

limits of the denudation for the proper approximation of the flaps, without encroaching on the proposed field of operation upon the posterior wall, can be determined. The good judgment of the operator and his experience will aid him in meeting the requirements of the particular case. The steps of the operation are as follows: the patient is placed in the lithotomy position at the edge of the table. With a tenaculum forceps the anterior lip of the uterus is seized and drawn downward toward the vulva. Another tenaculum forceps seizes the urethral

extremity of the cystocele about a quarter of an inch below the external urethral orifice. Sufficient traction in opposite directions is made upon the forceps to cause the tissues over the cystocele to be put on a gentle stretch, thus facilitating the placing of the incision which is carried from the urethral to the cervical extremities.

The incision is made through the vaginal mucous membrane to the depth of the bladder wall. The dissection of freeing the bladder from the vaginal wall is a skillful procedure. Its satis-

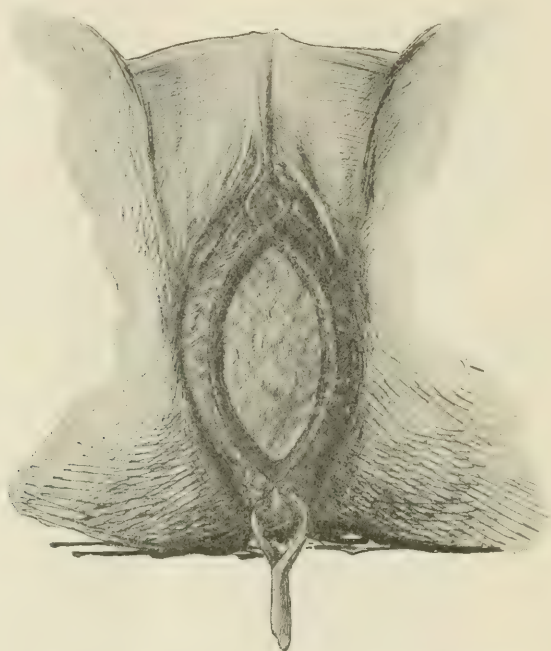


FIG. 3.—Showing resected flaps of vaginal mucosa.

factory execution and the ease with which it may be accomplished rests wholly with the operator's fancy and expertness in such work.

I have met with dissections that have proven quite difficult on account of the thin vesicovaginal septum and the scarcity of cellular tissue. Fortunately, there is usually a moderate degree of hypertrophy of the vaginal mucosa, as well as a sufficient amount of cellular tissue in a well-developed cystocele, that will enable the dissection of the flaps to be accomplished more easily and more rapidly. I have found that I could facilitate my work

by using a cuticle knife, such as is used by the manicure. The knife has no point and the shape of the blade is such that it can be made to cut in any direction with great convenience (Fig. 7).

The beginning of the dissection is usually attended with some little difficulty till the cellular space can be demonstrated satisfactorily. After that much of the work can be carried on by

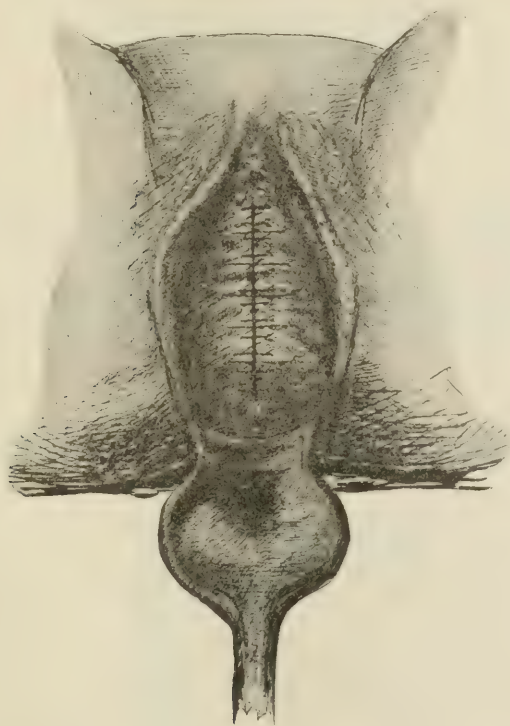


FIG. 4.—Operation complete. Showing application of interrupted sutures.

gauze dissection. As the dissection progresses, it remains optional with the operator whether he continues the use of forceps or his fingers to hold and manipulate the flap. Whenever I can do so I prefer the use of the fingers covered with gauze.

In making the dissection it is advisable to hug the vaginal wall closely, particularly at the base of the bladder and at the location of the ureters. After the vesical wall has been sufficiently exposed, the bladder is detached by blunt dissection

from the anterior surface of the uterus. The vesico-uterine fold of peritoneum is not opened.

It is not an easy matter, where the laxity of the tissues is so

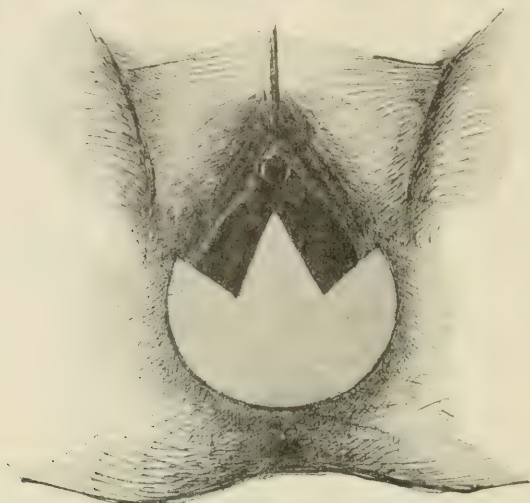


FIG. 5.—Showing area of denudation for construction of new perineum.

pronounced as is found in a well-developed cystocele, to determine the proper amount of tissue that is to be sacrificed from the flaps to obtain an accurate approximation.

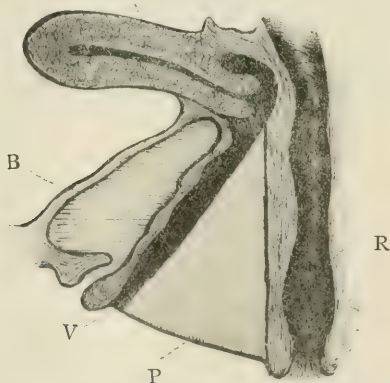


FIG. 6.—Sagittal section showing the newly constructed perineum and the support it gives to the anterior vaginal wall. B. Bladder. V. Vagina. P. New perineum. R. Rectum.

Clamping the margin of each flap separately with several forceps, having an assistant press back the bladder with a narrow retractor, and drawing the flaps over the exposed bladder

toward the median line, has proven a satisfactory way to determine the extent of the flap resection. After the flaps have been resected to conform to the requirements of the case, the denuded area should be ovoid in shape and should be free from corners, as these are difficult to approximate and are usually doubtful points during the reparative process. It is a matter of some importance that the vaginal margin be dissected up all around from the underlying tissue for at least a quarter of an inch, so as to permit the vaginal wall to slide over the base of the bladder when its edges are drawn together by suture.

The suture is usually started at the cervical angle; here the vaginal wall is sutured to the uterus as high as the internal os with No. 2 chromicized catgut. This procedure is very desirable,

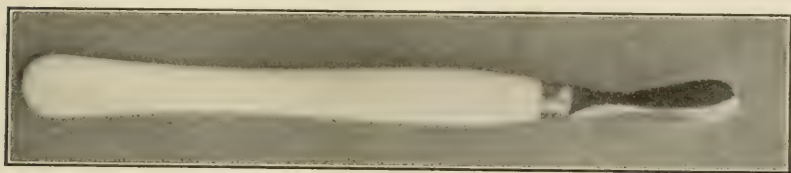


FIG. 7.—Knife for separation of the vagina from the bladder wall.

as it gives additional support to the base of the bladder. It disposes of the antero-posterior tissue redundancy, and in that way aids in obliterating the urethrocele, thereby often obviating the necessity of a transverse dissection in the urethral region. After the vaginal attachment to the uterus is made, the rest of the vaginal wound is sutured with No. 2 chromicized catgut with either an interrupted or a continuous suture. The interrupted suture appeals to me in this work. Its introduction appears to be more satisfactory.

In placing the suture a strong, full-curved sound needle is used. The needle is introduced through the vaginal wall about one-fourth of an inch from the margin. In traversing the wound area to the opposite side, portions of the vesical wall, or the connective tissue attached to it, are picked up to prevent the forming of dead spaces between the bladder and vagina. The interrupted sutures are placed about a quarter of an inch apart. After completing this suture line, a running suture of No. 1 chromicized catgut is introduced half-deep along the vaginal wound to give a better approximation.

To relieve the strain upon the tissues a sufficient number of

silkworm-gut sutures are introduced at intervals of half an inch along the line of greatest tension. These latter sutures are allowed to remain up to the fourth week, when the newly built perineum will permit of sufficient manipulation to remove them.

The final step is the construction of a pelvic floor that will insure the proper support to the anterior vaginal wall. The accompanying illustration will show the character of such a perineum. The bringing together of the levator fibres, a firm union of the vaginal tissue in the area of the sulci, and a denudation about the vulvo-anal region that is more extensive than is usually practised in an ordinary perineorrhaphy are its essential features.

4629 COOK AVENUE.

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## CORRESPONDENCE.

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### SPINAL ANESTHESIA IN LABOR.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS AND  
DISEASES OF WOMEN AND CHILDREN.

DEAR DOCTOR:

In looking over Dr. Bovée's article in the January number of the AMERICAN JOURNAL OF OBSTETRICS I find that Dr. Bovée, or whoever was looking up his literature for him, has made a mistake which I should be glad to see corrected if possible in the next number of the JOURNAL. In his article on "Three Years of Gynecology and Obstetrics in the United States" on page 22 in the paragraph on Spinal Anesthesia he states that Newell "extols its use in labor, his conclusions being based on 123 cases which he personally conducted." I wish to take exception to that statement as I have never used spinal anesthesia in labor, and unless I have a change of heart do not expect to. The article which he referred to in that statement was one of the subcutaneous use of scopolamine-morphine in labor which I still believe in properly selected cases to be a most useful procedure.

Sincerely yours,  
F. S. NEWELL.

JANUARY 17, 1910.  
379 BEACON STREET,  
BOSTON, MASS.

## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting of November 9, 1909.*

*The President, R. L. DICKINSON, M. D., in the Chair.*

DR. G. L. BRODHEAD reported a case of

### SPONTANEOUS RUPTURE OF THE UTERUS DURING LABOR.

MRS. B., age thirty-seven, VI-para, came under observation in the service of the Post-Graduate Hospital on April 6, 1909, about two weeks prior to the expected date of confinement. The patient had had four normal confinements, in fact they were described as precipitate. The last child was born in March, 1907. In May, 1908, the woman miscarried at three months, and one week later was curetted, making a good recovery. The date of the last menstruation was July 15-17, 1908; her labor did not begin until May 22, one month later than the expected date. The history of the present pregnancy had been normal, the uterus appeared to be of eight months' size, position R. S. P., fetal heart not heard. The pelvic measurements were large (spines 26 cm., crests 30 cm., obliques 23 cm., and external conjugate 21 cm.); and the vaginal examination was normal. Labor began May 22, at 10:30 A. M., and at 2:45 P. M. Dr. Tracy, of the house staff, saw the patient. The woman was having severe pains every two or three minutes, but there had been no bleeding. Upon examination, some clots were found in the vagina, the cervix was very soft and admitted three fingers. The membranes were intact, the vertex was just beginning to engage in the brim, and there was a suspicion of placenta previa lateralis. The pulse was 105, the temperature 99°, and the general condition was good, but the woman complained that the pains were more severe than in any previous labor. At 3:20 P. M. the patient had a severe pain in the left side of the abdomen, beginning below and extending upward, and she remarked that she thought "the child was born." Immediately labor pains ceased and the woman complained of weakness and constant severe pain in the left lower quadrant of the abdomen extending across the abdomen above the umbilicus. The patient began also to vomit, this symptom continuing at half-hour intervals. Vaginal examination showed no change in the position of the vertex, but there was considerable bleeding, although this was not at all alarming. At 3:40 P. M. the pulse was 130, at 4:10, 140, and the abdomen became very tender, while the pain was severe and continuous. The visible loss of blood up to this time

was not more than ten ounces. The patient was transferred to the hospital and on admission the temperature was 101°, the pulse 148, respiration 38. The abdomen was exquisitely tender, especially above the navel, but the uterus though tense, was of normal size. The severe abdominal pain caused the woman great distress. The diagnosis made was concealed accidental hemorrhage, and immediate delivery seemed indicated. The vertex was found dipping in the brim, position L. O. P., the cervix was very soft and dilated to the extent of three fingers. The cord was pulseless, and craniotomy was at once performed, the fetus weighing five pounds (minus the weight of the brain) being easily extracted.

When the head was brought down into the pelvis, a small rim of cervix could still be felt, but with very slight traction the dilation of the cervix became apparently complete. In reality the rupture of the uterus was extending downward through the cervix. At this point, an intravenous infusion of 1,000 c.c. was given, as the pulse was very rapid and thready. There was very little bleeding during or after the operation, and the uterus appeared to be well contracted, with the fundus just above the symphysis. Several ineffectual attempts were made to express the placenta, but finally the hand was carried up into the uterus and the placenta extracted. At this time the rupture was discovered, and as the laceration seemed extensive, preparation was made for immediate laparotomy. A median incision was made, and a small amount of free blood was found in the abdomen. There was a complete rupture five inches in length, on the left side, running from the attachment of the left round ligament downward through the cervix.

The laceration was not ragged, so the uterus was closed with two rows of No. 2 chromic gut sutures, avoiding the mucosa, and a continuous suture of plain catgut was passed through the peritoneal coat, covering in the line of suture. The blood lost during labor, delivery and laparotomy did not exceed twenty ounces.

The abdominal incision was closed in the usual manner, and the patient was returned to the ward in very good condition, pulse 120, respiration 26, temperature 99° F. For a period of thirteen days following operation, the temperature varied between 100° F. and 103.6° F., the pulse between 100 and 120, although the incision healed perfectly. After the operation there had been considerable pain, which became very severe about the eighth day and localized on the right side midway between the anterior superior spine and the free ribs, where one could palpate a hard mass of about the size of a large orange, fairly movable, tender, but not markedly so, percussion note flat.

The blood count was

Fifth day, leukocytes 4,300, polynuclears 75%  
Seventh day, leukocytes 7,600, polynuclears 85%  
Tenth day, leukocytes 10,000, polynuclears 85%

After the eighth day there were nausea and vomiting. On the thirteenth day, Dr. Knipe operated, making an incision three inches in length directly over the mass. The omentum, which formed the median and anterior wall of the mass was separated at its outer edge by blunt dissection, whereupon nearly a pint of greenish foul pus with a number of dark leathery clots was evacuated.

The cavity was drained, and the wound partly closed by suture. Recovery was uneventful, and the woman was discharged from the hospital three weeks later. At the present time the patient feels very well. Menstruation is regular, but a small sinus persists from the last operation. The points of greatest interest are 1. that all previous labors had been very easy, 2. there was no predisposing cause of rupture such as a uterine cicatrix, 3. the only operation the patient had ever had was the curettage one year before the time of rupture, 4. the rupture occurred after a very short labor, in which there was no obstruction to delivery, and where the child was small. That the uterine wall was weakened at the left side is evident, and it is possible that the curettage may have been responsible. It is the only case of spontaneous rupture without known predisposing cause which has come under my observation, and it seemed to me to be both worthy of record and also of discussion by this Society.

DR. J. O. POLAK reported a case of

RUPTURE OF THE PARTURIENT UTERUS WHILE PERFORMING VERSION IN A SPASTIC UTERUS.

MRS. R. R., No. 4492, Jewish Hospital Service, was admitted May 4, 1909, with the following history: She was twenty-five years of age, born in Austria, and married nine years. Her family history was negative. She had enjoyed perfect health until her marriage. In 1903 she was operated upon for acute appendicitis. Her menstrual history began at fifteen, and was of the twenty-eight day type and painless. Her last menstruation had occurred July 7, 1908, making her nearly three weeks overdue at the time of her delivery. She had had two previous premature deliveries, at the eighth month, eight and two years ago, respectively. Both children were born dead. She had had one miscarriage at the fourth month, between her children.

On the morning of admission, after twenty-four hours of ineffectual labor, which had been complicated by a face presentation, and early rupture of the membranes, she was delivered of an eight and one-half pounds child, by internal podalic version.

The physician in attendance noted that he had no difficulty in turning the child, after he had succeeded in introducing his hand into the uterus, which however had necessitated some force to accomplish. The placenta came away with Credé. Immediately after delivery the patient began to feel faint, and complained of persistent pain in the lower abdomen. There was

very little external hemorrhage, so that these warnings went unnoticed until the evening of the same day, when the patient went into collapse, and Dr. Humpstone was called in consultation. He diagnosed a ruptured uterus, and referred the patient to my service in the Jewish hospital.

When seen immediately on her admission, she was pallid, a cold perspiration bathed her face, her pulse varied between 140 and 150, and was compressible. The abdomen was distended and exquisitely sensitive, so that no uterine tumor could be mapped out by abdominal palpation.

On exploration by the vagina, the patient presented a third degree perineal laceration, and a deep tear was noted, starting in the left side of the cervix, and extending 14 cm. up the uterine wall into the peritoneal cavity. The uterus was empty and well contracted. Under morphine and hyocine and a small amount of chloroform-oxygen anesthesia, with the able assistance of Dr. Humpstone, the abdomen was opened, and a rapid supra-cervical hysterectomy was performed. A very large quantity of blood was found within the abdominal cavity, and the left uterine artery which had been torn away, was still oozing. The lower portion of the cervix was disinfected with iodine, and abdominal drainage made with tube and gauze, the latter being used to pack off the raw surfaces in the left side of the pelvis, which had been denuded of peritoneum by the rupture.

On the second day after operation, the patient developed an acute pulmonary congestion of both bases, and an acute post-operative dilatation of the stomach. These conditions cleared up in the course of a few days, with cupping and gastric lavage. From then on the patient made an uneventful but slow recovery. The drainage was withdrawn on the eighth day.

On June 3, 1909, under ether-oxygen narcosis, her sphincter and pelvic floor structures were repaired, and she was discharged cured, June 25, 1909.

DR. H. C. COE read a paper on

#### INJURIES TO THE NONPUERPERAL UTERUS.\*

DR. EDWIN B. CRAGIN presented a paper on

#### INJURIES TO THE PUERPERAL UTERUS.†

#### DISCUSSION.

DR. BOLDT.—I shall limit my remarks to the first paper (Dr. Coe's) on injuries to the nonpuerperal uterus. Dr. Coe remarked that he had no use for the uterine sound. I would like to add another instrument which I think may well be dismissed under ordinary circumstances, and that is the dilator for that class of patients upon whom we purpose to do curetting. I do not know whether the gentlemen have made an extensive observa-

\* For original article, see page 192.

† For original article, see page 185.

tion of the matter, but in nearly every instance whenever a curetting is really indicated, there is no necessity for one to use a dilator. The curette will pass through the cervical canal without any trouble. The condition which necessitates a curetting softens up the cervix to such an extent that the curette can be passed through the canal without trouble, and I have noticed it so invariably that I do not believe that in more than 2 per cent. of instances am I required to use a dilator.

Injuries to the nonpuerperal uterus, if occurring under proper antiseptic precautions, that is in a hospital where we have the patient under control, I believe have never caused an instance of unfavorable results, so far as my experience goes. It is only in instances where we have a septic condition of the uterus when the injury occurs that we may look for an unfavorable result, but in no instance, when everything is favorable, is there any need of an operation because a perforation has accidentally been made.

Injuries do occur with all who have extensive experience. The speaker, Dr. Coe, has mentioned that, and I believe we can all corroborate his remarks on that point. The main point that I desire to make is the nonnecessity of being apprehensive of unfavorable results if antiseptic conditions are present and second, the nonnecessity in nearly all instances of using the dilator in curetting.

DR. GOFFE.—We can all corroborate, if we just recall a little our experiences, the statements made by Dr. Coe that we are none of us free from blood-guiltiness in this manner of using instruments inside the uterus. Nevertheless, I should disagree with him and with Dr. Boldt that we should throw these instruments away. Dr. Coe would banish the uterine sound and Dr. Boldt would eliminate the dilator. Now I think that position is wrong. I remember very distinctly when Dr. Emmett surprised us all by saying, when the aseptic methods came into use, that he found he had been guilty of a great many injuries from using the sound, and if God would forgive him for the past, he would never use a sound again; that he had thrown his sound away. Dr. Coe has thrown his sound away. I do not believe in that. I believe we should know how to use and teach students how and when to use these valuable instruments.

In the regard to the use of the curette, I am glad to emphasize what Dr. Cragin has said that if one handles the sharp curette properly, there is no danger of perforating the walls of the uterus. No force or pressure should be used except in the drawing motion. When the curette is being carried up to the fundus or turned about in the uterus the greatest gentleness should be used. Here again I should say that the sharp curette is not to be abandoned or thrown away, but used properly, and its proper use and its dangers impressed upon students. I find the dilator a very valuable instrument and instead of using it simply for the purpose of getting a curette inside the uterus, I think the main purpose, the principle object of dilatation, is to secure drainage.

In my opinion, the majority of uteri that we are curetting every day would get perfectly well if they had good drainage. The curette is not necessary and in many instances is harmful.

My custom is after thorough dilatation to explore carefully the interior of the uterus with the idea that the curette may not be necessary. If I find it is not necessary, I immediately refrain from curettage, contenting myself with the thorough dilatation. My custom and teaching is that in the simple processes of dilatation and curettage, it is far better to spend fifteen minutes in dilating the cervix and two minutes for curetting, than to reverse these periods of time. With free drainage and appropriate applications, nature will cure the disease, unless there is some tissue that needs to be forcibly taken away.

In regard to the treatment. In some instances I do a laparotomy and in my earlier experiences when perforation occurred I felt it my duty to do a laparotomy, but I never yet have done a laparotomy for such a condition where I found it necessary. You can perforate the nonpuerperal uterus with various instruments, but no hemorrhage occurs. I have never seen a case where the hemorrhage was serious. When it comes to the dangers of sepsis, then I agree with Dr. Boldt that if we have the case prepared for operation, where the canal is clear and we have used aseptic methods, there is no danger of carrying sepsis inside the abdominal cavity, and I would never do laparotomy.

DR. COE.—I think I made the statement that I did not approve of the sound in the examining room. Of course at the operating table, under strict asepsis, it is a different matter.

DR. HARRISON.—There is little to be said, against the views advocated, but we all know that we get but a partial perception of the truth and therefore the importance of these discussions in order that the question may be considered in all its varieties and aspects.

I agree heartily with Dr. Coe in his estimation of the sound. I think just in proportion as you use this instrument, the sound, in that proportion you show your want of skill in bimanual palpation. I rarely use it.

Now in regard to the curette, I also agree with Dr. Coe in his conservatism. I don't know of any instrument that is more abused and certainly, in puerperal cases, I have seen the worst form of pyemia caused by it. In that particular I don't agree at all with Dr. Cragin. No matter how carefully you use it in all these cases of sapremia it is a dangerous procedure. There is no use of going into the uterine cavity for portions of placenta. Very little harm will come from a skillful operator like Dr. Cragin, but you must remember that these teachings go forth to the medical public at large and induce men who do not know how to use the method of curettage, to apply it unnecessarily. I have seen many of these cases in which the young obstetrician has used these methods, after childbirth, looking for portions of placenta, and has consequently set up violent sepsis.

Nor do I advocate douches. I used to use them frequently, but I found to my sorrow I did little good with them. When I did use them, I often had the experience of rigors and high fever. Therefore, I think in all these cases of sapremia, the curette is contraindicated and only one or two intrauterine irrigations are rarely permissible. In septic infection (streptococcic) neither one nor the other should be employed.

In regard to deep lacerations after delivery at term that sometimes involve the parametrium, one of the greatest advances we have made in treatment is in a suggestion made by Fritsch. That is, as soon as the placenta is delivered, which is done very easily because you have a wide open cervix, you immediately compress the uterus from above, make it contract and anteflex it thoroughly, and then with the other hand below bring the labia majora together and carry the soft parts up to the angle of the arch of the pubis, press the pelvic floor toward the pelvic cavity as it were and you bring the two torn surfaces together. By the hand above cooperating with hand below forcible compression is produced. You hold them there half an hour or more, thrombosis takes place and the separated parts adhere; when you release the uterus, no hemorrhage takes place. Of course the upper hand may get tired, but your assistant may relieve you, or you may put a bag of sand over the lower part of the abdomen.

DR. JARMAN.—In regard to the treatment of rupture of the uterus, especially the instance referred to by Dr. Coe, I cannot agree that these cases are absolutely harmless. I have been called in six times by physicians in the city to repair injuries as a result of curettage. It has seemed to me in every instance the injury has occurred with the dilator. The first instance was like the case of Dr. Studdiford. It was in the hands of a gentleman absolutely as clean as could be. He was dealing with a woman who had a miscarriage; the uterus was soft; the miscarriage had come on itself. In dilating the uterus, a rupture occurred with the dilator and when he put in his forceps he pulled down a loop of gut. He was a man who had not had a great deal of experience and when he found what he had done, he stopped, put a little gauze in the uterus, got someone to the telephone for me and we operated in the house, pulled this gut back, did a laparotomy and the woman made a perfect recovery. In the other five instances I am perfectly certain that the laparotomies were justified, for I operated in every instance.

I am not willing to take the ground some of the gentlemen have taken that perforation is not dangerous. If they can leave their patient after what they know to have been a perforation of the uterus, especially if it is probable that that perforation has been made by the dilator, I could not do it. Some one spoke of the difficulty of perforating a uterus where you held it in your hand after hysterectomy. I remember on one occasion seeing Dr. Tuttle remove a uterus, ruptured by an instru-

ment, probably a sound, in the hands of a careful man, Dr. Tuttle removed this uterus, passed it over a sound standing on end and the weight of the uterus was sufficient to press the sound entirely through its substance. Do we wish to let this Society go on record that it is perfectly safe to let these patients go?

DR. JEWETT.—I wish to endorse Dr. Coe's views of the curette. The curette is comparable to a razor. The dull instrument does more harm and less good than the sharp one.

As to the harmlessness of perforating the aseptic uterus, I had the misfortune to perforate a uterus at the isthmus, laterally. The uterus was apparently aseptic and the technic as clean as it could be made but the woman developed a crural phlebitis.

One or two cases may perhaps be of interest as curiosities. In one her physician had treated a supposed abortion. He said he pulled down something which he could not identify, and, to make sure, he cut it with scissors. When I saw the case, several inches of intestine protruded through the vulva and it had been cut squarely across. So much mesentery had been torn off that the patient was moribund from hemorrhage.

Recently a patient brought into the hospital, after miscarriage in the service of Dr. Pool, was found to have a large hole in the anterior wall of the cervix. Through this the examining finger passed into the bladder. A portion of the bladder wall, prolapsing through the opening in the cervix, had been mistaken for secundines and twisted off. The injury was a difficult one to repair.

DR. STONE.—Our distinguished member, Dr. Emmett, a year or so ago in an anniversary address before one of the large American societies remarked the close relationship of sepsis to injuries of the cervix and subsequent troubles. He said that in the last few years of his active practice he did not see so many cases in which the cervix was hard and indurated and in which there was the necessity for his operation of trachelorrhaphy; and this illustrated clearly the progress that had been made in obstetrics and the good results which followed asepsis.

DR. McLEAN.—The point Dr. Brodhead made, that rupture may occur in a multipara who has had easy and even rapid labors previously—that in the course of a normal delivery she may have a rupture and a fatal one at that—is very interesting, and a very good thing to recognize and remember.

Just to support the instance Dr. Brodhead has given, I will call attention to a case which occurred some years ago. The woman was a multipara who had had several children with easy deliveries and she was in her fourth labor. The second stage had proceeded to the point where the head was upon the perineum, everything going favorably, when she began to scream and the head disappeared. The case was so plain that the diagnosis was made instantly because not only had the head raised, but the child's feet could be seen kicking about under the skin of the liver region. I was called over to see the case, made as rapid

preparations as possible, went in with my hand and found the head and one arm in the uterus. The rest of the child's body, the other arm and legs were all outside of the rupture, which extended from very near the top of the fundus down to the broad ligament, so that the whole side of the uterus was opened. I drew the child down into the uterus and then turned it, brought the feet down and delivered it within a few moments. I noticed the amniotic sac from which I drew the child was protruding from the wound in the uterus, and it is interesting to note that this had remained intact. In other words, the child had been in the amniotic sac out in the peritoneal cavity kicking about in this manner and when I withdrew the child the sac remained. I carefully drew the placenta down and the membranes came down. I compressed the uterus and held it very much as Dr. Harrison described, and allowed the case to go to a natural course of recovery.

Now the sequence, that is in regard to the after-effects when hemorrhage has taken place in these ruptures, it so frequently ploughs its way down under the peritoneum and makes its way up the broad ligaments and outward under the skin. This woman had an ecchymosis all the way from the axilla down to the thigh. She was perfectly black for several days and went through the ordinary changes of ecchymosis.

DR. COE.—There are several interesting questions which I did not consider because of lack of time. Dr. Jarman's point was well taken. I tried to emphasize that. If there is sepsis, hemorrhage or extensive lesions, we should do a laparotomy. The sound is *not* an instrument to be used indiscriminately in the examining room. The more we teach the general practitioner not to use it, the better it will be. Its use under strictly aseptic precautions is of course a different matter.

Rupture of the parturient uterus has always interested me because I was so unfortunate (from my own stand-point) as to have a brilliant case early in my practice, which quite turned my head. A case in a tenement house before the days of asepsis, and at that time was unique in its way. As a result I was asked to operate in four other cases, all of which terminated fatally. I once happened to be making my rounds in the old maternity hospital and found a patient there in a state of collapse, an hour after her return from the lying-in room. Nobody had noticed that anything was the matter with her. I introduced my hand into the vagina and discovered an immense rent in the broad ligament. I opened the abdomen (the patient died on the table), but there was no blood in the peritoneal cavity though an immense extraperitoneal extravasation had occurred, extending as high as the kidney.

The practical deduction from my paper is of course that the skilled operator may use any instrument that he wishes; it is the *hand* behind the instrument that counts.

DR. CRAGIN.—I only want to reply to my good friend, Dr.

Harrison. Not everyone is as fortunate as Dr. Harrison in never finding remnants of placenta in the uterus. There are two things to think of in the care of a woman after delivery. One is her mortality and the other is her morbidity, and if you can shorten the latter by clearing out from the uterus retained products of conception, I think we are in duty bound to do it, although I believe thoroughly in the care needed in using any instrument in the uterus. It should be borne in mind that a neglected sapremia will sometimes lead to a bacteriemia, hence I believe that we want to get the uterus clean but to do it with the least possible injury to the uterine wall.

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## TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

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*Meeting of November 5, 1909.*

*The President, J. T. KELLEY, M. D., in the Chair.*

The committee on OPHTHALMIA NEONATORUM\* reported *in extenso* through its chairman, Dr. Moran, giving an account of some of its original investigation on the subject. It was voted that the committee be thanked, and that a copy of the report be transmitted to the health officer.

DR. GEORGE N. ACKER read the paper of the evening on

THE DIAGNOSIS OF TYPHOID FEVER IN YOUNG CHILDREN.†

### DISCUSSION.

DR. ADAMS said that there was a general hesitancy on the part of physicians to accept the diagnosis of typhoid fever in children. He had, however, seen one case in a child five months old whose mother had typhoid. The infant had nursed for ten days after the mother had been taken ill. The malarial type of fever was more common than the typical typhoid. The Widal reaction was negative in most of the cases, and therefore should not be considered as reliable as in adults. The bacterial cultures had not been made. The spleen was not palpable. At present he had under his care a child with retracted neck, set eyes, and an appearance suggestive of tubercular meningitis. But the pupils reacted to light, were not dilated, and there were no rose spots, no spleen palpable, the Widal was negative, the temperature ran between 102 and 104.5; clinically, the case was a typhoid. Cultures had not yet been taken. The diagnosis of typhoid in children under one year had not been made by some

\* See original article, page 367.

† See original article, page 361.

of the best men until their attention had been called to the diagnosis.

DR. MORAN called attention to the statement that Peyer's patches were said not to develop until after the first year and asked if the autopsies had shown analogous lesions in the intestines.

DR. WALL asked what the typical syndrome of typhoid in infants presented. He had not seen a case which was to him characteristic in a child under two years of age. The tendency at the Children's Hospital was to call too many cases typhoid. The Widal reaction should be just as positive in children as in adults. Cases of typhoid in children were much more apt to be of the ambulant type. He noted the characteristic difference in pulse between typhoid fever and scarlet fever in the much more rapid pulse of scarlet fever.

DR. DONALLY did not think Peyer's patches essential to typhoid. Cases of typhoid fever had been reported even in the fetus by Morse. Holt, in 10,000 cases at the Children's Hospital, had up to a few years ago seen no cases of typhoid in children under two years. Since then he had seen two cases in infants of one year of age. There had been no cases diagnosed at the Foundlings' Hospital in twenty-five years. Perforation was estimated to occur but half as often in children as in adults. All of the cases reported by Dr. Acker had been proven typhoid at autopsy or by laboratory. The clinical diagnosis was not satisfactory. The Widal reaction or culture from blood, urine, or feces should settle the diagnosis. At the dispensary of the Children's Hospital in the past eighteen months there had been seventeen cases in which on the first visit a provisional diagnosis of typhoid had been made. Five of them had been acute intestinal disorders as shown by the subsequent visits. Eight of the cases had never been seen a second time. The other four had been admitted to the hospital and the diagnosis confirmed. Of these four three had had a sudden onset; two with vomiting, and one with epistaxis.

DR. MORGAN thought that the difficulty in diagnosis lay in the inability to get a history of prodromal symptoms. In infancy the breast-feeding and the general custom of pasteurizing the milk tended to prevent the infections. He considered the laboratory diagnosis very helpful.

DR. SPRIGG doubted the infection of an infant from a mother with typhoid. He had had several cases with typhoid in mothers who had nursed their infants a week or so until a positive diagnosis had been made and then had begun nursing their children after recovery. None of these cases had infected the infants.

DR. ADAMS thought that in his case the child got the typhoid from its mother by nursing. He had had three autopsies in children under one year in two of which the Peyer's patches were visible. One of the cases died of hemorrhage.

DR. ACKER thought that it was possible to make the diagnosis of typhoid in the milder cases much better since the introduction of laboratory methods. In the intestines he looked for involvement of the solitary follicles rather than the Peyer's patches. He had had one case in which the mother during the entire course of her typhoid nursed her infant and the infant had not developed the typhoid.

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## TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

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*Twenty-Second Annual Session, Held at Hot Springs,  
Virginia, December 14, 15 and 16, 1909.*

*The President, STUART MCGUIRE, M. D., of Richmond,  
Virginia, in the Chair.*

THE Association met in the ball-room of the Homestead Hotel, and after announcements by the Chairman of the Committee of Arrangements, Dr. Lewis C. Boshier, Richmond, Virginia, the scientific work was begun.

### A BRIEF DISCUSSION OF SOME OF THE SURGICAL JUNK DEMANDING FURTHER SURGICAL INTERFERENCE.

DR. JOSEPH PRICE, of Philadelphia, stated that a short time ago a patient entered his office and asked him to reopen her abdomen, and to correct, if possible, a distressing condition that she could no longer bear. Her abdomen had been opened three times, a pelvic operation having been followed by two gall-bladder operations. She complained bitterly of a gripping sensation in her epigastric region, followed by nausea and starvation. In a short period of six days he had reopened four abdomens for postoperative pathological and operative sequelæ. Large numbers of these patients were objects of pity and mercy. One of the number had her abdomen opened eight times. Fortunately, the last operations were complete procedures, the reproductive organs and appendix were gone, leaving only a ventral hernia, omental and bowel adhesions to be freed. One of the late operators drained her gall-bladder, leaving a fistula and distressing adhesions. He liberated the stomach, bowel, and other adhesions, exposing the gall-bladder, disorganized and charged with pus; its clean removal would probably result in a cure.

Dealing with surgical junk required more than the ordinary hospital apprenticeship. The operations done by the pioneers in abdominal surgery were free of operative sequelæ. The percentage of recoveries was good in the country. He had had the

opportunity of seeing a large number of the patients operated upon by the first school of abdominal surgeons. They constituted an interesting group of patients, none of them complaining of those common symptoms of modern operations. The high death rate in the hands of some few operators explained surgically the distressing condition of the few that did recover, but commanded more surgery.

It was needless to detail the variety of pathological complications from the pelvic basin to the pyloric orifice of the stomach in the great variety of surgical afflictions found between those two points; but if dealt with scientifically, according to surgical light, junk would not be the result. In the suppurative forms of disease of the pelvic viscera above the head of the cecum, and on up to the suppurations about the liver the advanced thinkers and workers had given us perfected procedures, and, if practised completely and scientifically, but few uncomfortable sequelæ would follow. It was exceedingly rare to get junk from the operating tables of the experts. There was prolonged and painstaking effort on the part of the clinical schools to correct the common errors and calamities. Our precise knowledge of pathological calamities and the early efforts of relief now gave us about a *nil* mortality.

We must have more prolonged hospital apprenticeship in our young men at the hands of skillful operators. All of our graduates should go through a hospital. The public hospitals, like the private hospitals, should be made clinical schools, and from this clinical schooling, on top of a thorough scientific education, we would get a new class of practitioners, better pathologists, and better diagnosticians. The resulting thoroughness, scientific and clinical, would give us a stronger profession with better judgment. Doctors with better education would give us the patients early, while the troubles were simple, free from invasion and infection, simple operations demanded, extensive and complicated procedures rare.

All junk surgery was uncertain; it might be simple or it might be too complicated for completion.

#### DISCUSSION.

DR. LEWIS S. MCMURTRY, of Louisville, said that Dr. Price had called attention to one of the greatest evils prevalent at this time in relation to abdominal surgery. He alluded particularly to incomplete operations being done and to a large number of men who were operating in the abdomen who ought not to do so without having served an apprenticeship in this work. When this association was first organized it was far more difficult for men who were not qualified to do abdominal surgery than at the present time. To illustrate: let us take any well-appointed hospital in any city in this country and it has a well-appointed operating-room. There was a nurse who was well qualified to prepare patients for operation and who understood the technic

of modern aseptic surgery and an operator who had no operative skill could put on a pair of rubber gloves that had been boiled, and, if the preparation had been carried on by this competent nurse, the operator could open the abdomen of the patient, stir around in there a good deal and the patient might not die. We all know that fifteen or twenty years ago if an operator undertook to do this kind of work the patient would die of sepsis. He could not clean his hands, he did not have the facilities of the modern hospital and sepsis was the result, and that soon finished his career. At the present time there were more men who were doing tyro-surgery in the abdomen than before.

There were men, who, without having served any apprenticeship, undertook surgical operations which Dr. Price had characterized as junk, in that they were incomplete and done by men who were not qualified to do them. Hence, patients went to surgeons with adhesions of all kinds and ptosis of the viscera, and other troubles. It was the duty of members of an association like this publicly and privately to condemn men entering upon this work without having served an apprenticeship and without being properly qualified before they undertook it.

DR. A. VANDER VEER, of Albany, New York, said he always felt that there was a certain amount of risk in encouraging abdominal surgery in small hospitals because much of the work was necessarily done by men who had not served a sufficiently long apprenticeship to do the work thoroughly and completely. Not infrequently a correct diagnosis was not made and incomplete operations were undertaken which did not reflect credit upon American abdominal surgeons. Within ten or fifteen years there had been a sort of feeling on the part of our younger surgeons to do as many operations as they could upon a particular patient. In this regard they sometimes erred. He had seen many cases that had terminated in what Dr. Price had termed surgical junk. He appreciated this paper because it was not only timely, but it dealt with a subject to which more attention should be paid at the present time. It was the kind of paper for the younger surgeons to read carefully.

DR. WILLIAM M. POLK, of New York City, stated that the trouble with some of us was that perhaps we had been endeavoring to work out pathological problems on live subjects and in so doing we might have left conditions within the abdomen in our endeavor to preserve structures, and so forth, that really had no business there. And in so far as he had been a sinner in that direction he was free to confess that probably he deserved all the criticism that the distinguished essayist had made. He was particularly obliged to him because in his paper he opened up the whole field of surgical work. He found that the average person had been so well educated that his or her mind was made up as to what they wished their physicians to do long before they interviewed them, and if he failed in any way to fall in with their preconceived notion they at once went elsewhere. He stated

that we all know perfectly well that there were a great many of the younger members of the profession who had not that stiffness of spine that comes with age, that kind of ankylosis of the vertebral column which was beneficent in its influence, and which did come with age and experience. Dr. Price had very aptly said something that we could not trifle with. He had alluded to the craze for medical education. While this was not an opportunity for moralizing, yet he thought he was correct when he said we were absolutely responsible for this state of affairs. Self-righteousness would not help the situation one bit. We had simply got to get down to the first principles as to what our knowledge of the situation taught, or what was the correct thing to tell our people, whether they are patients or medical students, and when we had reached that frame of mind we would get somewhere and we would not move one inch in the direction to which Dr. Price alluded until we made up our minds to rid our own minds of the junk that was in them.

#### ADHESION OF SIGMOID TO THE TUBE AND BROAD LIGAMENT AS A CAUSE OF PAIN IN SALPINGITIS.

DR. HUBERT A. ROYSTER, of Raleigh, North Carolina, stated that the Fallopian tube was the most frequent seat of inflammatory disease in the pelvis. It was the narrowest portion of the channel from the vulva to the ovary and was the least resistant to infection. Pain there was more concerned with salpingitis than with ovaritis, whether attended by a gross lesion or not. Too many times the ovary has been regarded as the offending organ, and needlessly removed. In some instances a diseased tube has been blamed as the sole cause of pain, while other factors produced by the salpingitis, or rising independently of it, might be overlooked. Somewhat less than three years ago he made a clinical observation, which bears upon this question.

Mrs. S., thirty years of age, married seven years, had given birth to one child about a year before. Previous to that she had had an abortion performed on account of pernicious vomiting. Several weeks before he saw her the same procedure had been again gone through with for the same reason. For two or three years she had suffered from typical tubal dysmenorrhea, the pain began a week before the flow and continued throughout the period. Intermenstrual pain was constant, and referred chiefly to the left iliac region; there had been several slight attacks of pelvic peritonitis. Defecation was particularly distressful. Almost every day the patient took morphine and heroin. Examination revealed extreme tenderness in either side of the pelvis, especially in the left. A diagnosis of chronic salpingitis was made. At operation, March 28, 1907, both tubes, tortuous and thickened, were removed. Their removal was considered justified in view of the history. The ovaries were what are called "cystic." He removed the left and excised two-thirds of the right one. In bringing up the left tube

for inspection he found that the sigmoid flexure was adherent to its fimbriated end, and also to the upper surface of the broad ligament. These adhesions were carefully divided, and the raw areas were closed by fine catgut sutures. The result was all that could have been expected. The patient immediately improved, but not until six months had passed was she really relieved. She was now entirely well, menstruating regularly without pain.

He had the records of eight similar cases in which the sigmoid adhesion was apparently the whole source of left-sided pelvic pain. He was convinced that the condition was one to be reckoned with. Its association with salpingitis or other disease of the pelvis could not, as a rule, be determined beforehand, but it might be suspected in the absence of other lesions, to account for the suffering and more especially in the presence of painful defecation. This had been a constant symptom in the instances which he had observed.

When discovered the adhesions must be dealt with as seemed proper in the given case. After snipping the bands which fix the sigmoid to the broad ligaments there were left two triangular raw surfaces, one on the bowel and the other on the ligaments, with their bases together. These formed a diamond-shaped area. The peritoneal edges were then closed over this space by a continuous catgut, applied from below upward. The sigmoid was thus allowed to drop lower down into the pelvis, away from the tube and ligament, a maneuver which, in his opinion, must be executed to secure permanent relief. Covering all denuded places was not less important. In one patient who had also a chronic cystitis, cured by a vaginal cystotomy, he failed to close the raw area as well as he should have done, and she was still, now and then, having pain on defecation, undoubtedly because of the reforming of adhesions. This was the only case of the nine that, so far as he knew, had not been relieved.

#### DISCUSSION.

DR. HENRY T. BYFORD, of Chicago, stated that when a patient presented herself with pelvic disease he always asked her whether she had pain or not on defecation. Then he asked the question, do you have any mucus in the stools? He thought he frequently found mucus in the stools in such cases, but not the abundant mucus which comes from a general colitis, nor the tendency to tenesmus with mucus that comes from inflammation low down in the rectum. There was pain on defecation, particularly when these patients were at all constipated, and there was mucus in the stools. In connection with the symptoms, if the pain was in the iliac region there would be found adhesions to the sigmoid flexure. In another class of patients there was pain in the back, and no pain in the iliac region.

With regard to the size of the sigmoid flexure, these cases were apt to occur in women who were constipated a great deal, and

who had a distended colon or sigmoid flexure, and the giving of laxatives and perhaps strychnin and other remedies to tone up the condition of the alimentary canal, with proper diet, would be sufficient, rather than to think of any surgical procedure in the ordinary cases.

DR. ROBERT T. MORRIS, of New York City, stated that there was one place where the surgeon should allow adhesions to remain, namely, in his subliminal mind. There was no one thing more often overlooked in his experience than peritoneal adhesions and their influence. Dr. Royster liked to close raw surfaces by continuous sutures. They saved time by one or two methods. The commonest one which he had used was to sprinkle aristol over the raw surface and wait until lymph accumulated and engaged the aristol in a mesh. This acted as an obstacle to further adhesion and he had found it satisfactory in his experiments on animals. The other method was to use sterilized animal membrane. That took a little longer, but in such cases as Dr. Royster had described, aristol powder would engage itself in the lymph coagulum, and present an excellent mechanical obstacle to re-adhesion.

DR. THOMAS S. CULLEN, of Baltimore, stated that he had a patient at the present time who had complained for five or six years of severe constant pain in the left side. On opening the abdomen he found the uterus perfectly normal. The tubes and ovaries showed no alteration. There was no thickening of the ureter. In making a closer examination of the sigmoid he found it adherent to the entire left broad ligament, extending as far forward as the round ligament. He adopted a procedure similar to the one described by the author of the paper, that is, freeing the adhesion as thoroughly as possible, and closing the raw surface of the broad ligament by a continuous catgut suture, and the raw surfaces of the rectum by interrupted suture, on account of which slight tearing was not so likely to occur.

DR. I. S. STONE, of Washington, D. C., stated in opening the abdomen for tubercular peritonitis and allied conditions they could never hope to separate all adhesions in such cases. It would be folly to try to do it. There were many women who had extensive adhesions, one organ being thoroughly adherent to its fellow, yet there might be no pain on defecation, or pain at any time. Where were they to stop in separating adhesions when they had such cases as that? Not long ago a woman came to him in Washington with a history of pain in the scar of a former operation. She had been operated on in Paris by an eminent surgeon; a consultation with three physicians was held. There was pain in the cicatrix and that was about all the woman could tell. The majority voted in favor of opening the abdomen to release the adhesion. When the abdomen was opened a slender adhesion of the omentum was found. The family was told that adhesions were found and separated. What else could they be told? The patient suffered precisely the same as before

the operation. He found he was getting excellent results from operating upon patients and placing the bowels in the very best condition he could for continuous passage of flatus and feces. He had separated adhesions of the sigmoid and in some cases had been astonished to find not only the greatest improvement, so far as pain and local distress were concerned, but in the general improvement of the patient, when the sigmoid had been sutured up out of the pelvis, where there should be continuous passage of flatus and gas, instead of more or less obstruction, produced by a circular folding or duplication of the sigmoid in the pelvis. Such an operation as that had given him more comfort than the mere separation of adhesions.

DR. W. P. CARR, of Washington, D. C., stated that they had all seen cases in which there were a great many adhesions and no pain, and in other cases where there was a slight adhesion with a great deal of pain. It was the situation of the adhesion and not the extent of it that caused trouble. A patient experienced great pain where there was a slight strong adhesion attached to a small area of some movable organ; whereas, in the case of an extensive adhesion to a large surface the weight was sustained without any pain whatever. The most painful adhesions had been those where there was a small band pulling on some point of a movable organ. He had seen a number of such cases, and had relieved the patient by separating the adhesion not larger than a lead pencil. On the other hand, large adhesions, especially around the liver and the stomach, did not seem to produce any pain.

DR. ROYSTER, in closing the discussion, said that he was very glad Dr. Byford mentioned the discharge of mucus, because that was very important. The question then arose, in such a case was not the intestinal condition the cause of adhesion rather than the pelvic disease? Where the adhesion was due to intestinal stasis the discharge of mucus was a prominent symptom, but where it was secondary to pelvic disease, mucus was not a prominent symptom.

#### THE TREATMENT OF ADVANCED EXTRAUTERINE PREGNANCY.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, in his paper drew the following conclusions: "1. Wherever conditions permit, operation for the removal of the gestation sac is indicated in the first half of an extrauterine pregnancy since, at this period, the mother is in great danger from rupture and sepsis, and the chances for the survival of the fetus are very poor. 2. During the latter part of an extrauterine gestation the chances of rupture and a fetal hemorrhage are very much less (4.8 per cent.), and the chances of the survival of the fetus are very much greater. 3. While malnutrition and malformation of the extrauterine child are more common than with the fetus under normal conditions, they are not frequent enough to contraindicate attempts at saving its life; hence, under favorable surroundings, when the

patient can be watched, she should be allowed to go within two or three weeks of term before operation. 4. Since the maternal mortality is more than twice as great after operation in advanced extrauterine pregnancy where the placenta is left behind, its removal should be one of the cardinal principles of each operation. 5. In the discoid variety of placenta, where only a small surface of this organ is not attached, the blood supply must be controlled either by tying the vessels or by compression of the aorta before an attempt be made to remove the placenta. 6. When, for any reason, removal of the placenta is impossible, the sac should be switched and the placenta shut off from the peritoneal cavity by gauze. 7. Dependent drainage through the vagina should be secured whenever possible."

#### DISCUSSION.

DR. HENRY T. BYFORD, Chicago, said with regard to the risk to the mother, if we could save a few mothers by operating early in cases of extrauterine pregnancy, those mothers would furnish more youngsters to help populate the earth than those we help to save at term. If it were the case of his wife, he would not be anxious to have a child born that was deformed or crippled, because such a child would not be a comfort to anyone. He was a good deal like the Spartans in this respect. They had good reason for doing what they did.

DR. THOS. S. CULLEN, Baltimore, said that Dr. Peterson had pointed out that it was rare to find the fetus in the early months of extrauterine pregnancy. He had in the hospital at present a woman in whose case the fetus at about the third month popped out as he opened the abdomen, and lived for nearly half an hour. The development of the hands and feet was perfect.

Some two or three years ago he reported a case of abdominal pregnancy where he did not know at the time of the operation what he was dealing with. There was a large mass which filled two-thirds of the abdomen. Over the surface was the transverse colon, and theomentum was adherent everywhere. The uterus was normal in size. There was a pus tube on the right side. The mass on the left side was removed. He thought he had to deal with a dermoid. On opening the specimen it proved to be a full term extrauterine pregnancy which had lain in the abdomen for four years. It was adherent to the mesentery of the transverse colon. He turned the colon in on itself, made a sort of funnel, and established vaginal drainage. The final outcome was perfectly satisfactory.

DR. WALTER C. G. KIRCHNER, St. Louis, reported a case in which pregnancy (extrauterine) went on to term. It was interesting to note that in this case the conditions simulated very much those of normal pregnancy. When first observed it was found that the patient had a tumor-like mass on the right side in the ovarian region, which grew and became central, and the surgeon who saw her at the time advised operation.

The woman feared this condition and fell into the hands of a number of physicians who treated her for a miscarriage. The tumor was of such a nature as to incapacitate her, and she was obliged to remain almost constantly in her room. When pregnancy was at full term and the usual labor pains came on, she having had eight children and stated that this condition was similar to that of previous confinements, the physician, thinking she was in false labor, decided to wait. She came to the hospital three days later with a prolapsed uterus and greatly edematous cervix. An emergency existed, and section was made. A sac filled the abdomen; the placenta was adherent anteriorly to the sac, and a healthy and living child was delivered. The child weighed six and three-quarter pounds and was well developed. With the exception of a slight asymmetry, there were no deformities. The child was over a year old now and was in good health. The sac was quite easily enucleated except for a few adhesions, omental and intestinal. The appendix was adherent to the sac.

DR. J. WESLEY BOVEE, Washington, D. C., had never operated on a living full-term or nearly term ectopic pregnancy. He had, however, operated on three advanced cases. In one case pregnancy had gone on to thirteen months with a dead fetus. His impression was that the sooner cases of ectopic pregnancy were operated on the better. In every advanced case he would operate as soon as he could after seeing them. He would not wait for the development of the fetus at full term. His impression was that the proportion of malformations was much greater than the author had given in his statistics.

DR. H. A. ROYSTER, Raleigh, North Carolina, had had three cases of full-term extrauterine pregnancy. In neither one of the three was the diagnosis made during the life of the fetus. All the patients got well. The first one was complicated with intrauterine pregnancy, also at term. In this case he had to marsupialate the sac on account of intestinal adhesions. The second one was mistaken for a normal pregnancy and allowed to go on for two months beyond term. The patient was in a dreadful condition from which she was saved by desperate means. In a third case the fetus had been in the abdomen for four years, and was regarded as a fibroid tumor, movable, and somewhat shrunken.

DR. LEWIS C. MORRIS, Birmingham, reported the case of a woman who had gone on to term, no diagnosis having been made. Labor pains had started, and it was thought she was in normal labor until it was found nothing was doing and an obstetrician made a diagnosis of abdominal pregnancy. She was sent to the hospital five days after false labor pains with this diagnosis. The physician-in-charge stated that the child was living during the time of the false labor pains. She lived seven miles from Birmingham; was sent across the country to the hospital in a wagon, and was in fairly good condition. She entered the hospi-

tal with a rapid pulse and some evidences of hemorrhage. He was telephoned for and as he walked into the hospital he found that the resident physician had done a postmortem Cesarean section with the idea of saving the child. The child died soon after the onset of false labor pains. There was undoubtedly separation of the placenta, probably on account of the transit of the patient from across the mountains to Birmingham. He cited this case with a view of emphasizing the importance of not waiting in these cases after the onset of labor pains, as the danger from hemorrhage in postponed operations was great.

DR. JOSEPH PRICE said that in these cases if surgeons operated early, they would avoid a high mortality.

DR. RUFUS B. HALL, Cincinnati, said the earlier an operation was done for extrauterine pregnancy the better it was for the mother. Whether the operator should wait for the viability of the child and try to save the life of the child would depend in the future as in the past on the judgment of the operator. The control of hemorrhage in the far advanced cases added more to the safety of the mother than anything the essayist had suggested. If one expected to save the mothers in the far advanced cases the placenta must be removed. In those cases in which it was impossible to remove the placenta the mortality was high, say 60 per cent. or more, from sepsis because the placenta sloughed and drainage could not be provided for. He was convinced that a larger number of these patients could be saved than was saved if the plan was adopted to sacrifice the uterus, as suggested in the paper, where the placenta was located in the pelvis, where it did not get its blood supply high up in the intestine or mesentery.

#### ABDOMINAL CESAREAN SECTION FOR PUERPERAL ECLAMPSIA.

DR. LANE MULLALLY, of Charleston, South Carolina, in his paper reported four cases of puerperal eclampsia. The first two cases were brought into the hospital with the usual history of eclampsia, each having had convulsions for about six hours before being admitted. The first case was delivered under anesthesia by dilatation, instrumental and manual, and high forceps, and the second by similar dilatation and version, each case occupying from one to two hours. In the first case convulsions continued for twelve hours when the patient died. The second case had several convulsions after delivery and recovered. The third case was a multipara with considerable scar tissue in the cervix, was anesthetized, and an hour or more uselessly spent in attempted dilatation. Finding it impossible to dilate the cervix, he determined upon abdominal Cesarean section, preferring this to vaginal Cesarean section and delivered the child in seven minutes. The whole operation, when completed, occupied twenty-seven minutes. The case was a six months' pregnancy and the child was dead when delivered; in fact, the child was dead before the operation was begun. In the fourth

case of full term pregnancy the woman had convulsions every fifteen minutes. In this case he did an abdominal Cesarean section at once, delivered the child in six minutes, closed the wound, and the patient was returned to the ward in twenty-six minutes from the time operation began.

Recently abdominal Cesarean section with the perfect technic of the present day had materially lowered the maternal mortality and the operation was selected not only on this account, but also for the reason that it offered better advantages in saving the life of the child than many of the intrapelvic methods of delivery. The operation was far less dangerous than high forceps, version and, he believed, vaginal Cesarean section. Granting rapid evacuation to be the rational treatment, he contended that it was best accomplished by abdominal Cesarean section.

#### DISCUSSION.

DR. REUBEN PETERSON was quite in accord with the essayist that in eclampsia, after all other methods had been tried, the uterus should be emptied as quickly as possible. He took issue with him, however, in the operation to be selected. First, he had always contended that an obstetric operation must be one which met the needs of the general practitioners at large, and if it did not, it was of very little value because only comparatively few operations were performed in hospitals; therefore, that principle should be kept in mind in advocating obstetric operations at large. There were certain vital objections to urging that abdominal Cesarean section for eclampsia be performed by the general practitioner. First, the general practitioner was not always in the habit of entering the peritoneal cavity. Second, his technic had not been perfected to such a degree that he could do it safely, and for that reason alone, in a large number of cases of eclampsia where operative means were necessary to empty the uterus, it was better to do so from below.

He concurred with the essayist in condemning manual dilatation in rigid cervixes, but he thought we should confine the criticism to that particular class of cases. The general practitioner would do much better by resorting to manual dilatation where he could do this easily. Vaginal Cesarean section was suitable only for those cases of rigid cervixes where it was not a question of an hour and a half or two or three hours to dilate the cervix sufficiently to permit the delivery of the child. When we came to compare vaginal Cesarean section with abdominal Cesarean section he did not think the essayist was right in his comparison of the two operations. Vaginal Cesarean section was not a difficult operation to perform if one was cognizant of the technic. It could be performed in about as short a time as abdominal Cesarean section, and with far less risk. Of course, if the woman's pelvis was contracted the operation must be done through the abdomen, but even in the hands of the general prac-

tioner he thought there would be far less damage by vaginal Cesarean section than in attempting to dilate a rigid cervix.

So far as sepsis was concerned, where the peritoneal cavity was not opened, and there was no need of doing this in vaginal Cesarean section, the dangers of sepsis would be less from an operation done below than from above.

DR. I. S. STONE, Washington, D. C., stated that in view of what had been said relative to early operation where, for instance, a woman was supposed to have a pelvis which would permit of the extraction of the child at eight and a half months in a case of eclampsia, the vaginal Cesarean section seemed to be the preferable procedure, for the reason that there were a number of men who could do the operation more safely from below than from above. The operation suggested by the essayist was proper in certain hands. There were some men who did not know and who had never learned surgery by the vagina, and these men could do better work through the abdomen. There were a number of men in every locality who were capable of doing the vaginal operation. On the other hand, there were men who favored Cesarean section in every instance of complicated labor. He did not think this was right. It was very desirable to let women have children as normally as possible, and the vaginal or abdominal operation should only be done after other methods had failed. Again, there were women who objected very seriously to repeated operations through the abdomen for the extraction of the child.

DR. JOSEPH PRICE thought Dr. Stone was in error with reference to intelligent women not consenting to the abdominal route for the delivery of the child. Take the wife of an intelligent physician or dentist, who had attained the age of thirty or thirty-five before she got married, and in the midst of modern conventional methods of living and great stress, we could find that late conceptions were favorable to the development of eclampsia and also to surgery. Such an intelligent woman would accept a wise presentation of the method of delivery. Wonderfully good work had been accomplished by vaginal Cesarean section, and the vaginal operators were men who had served a long apprenticeship in extirpation of the uterus and in the repair of accidents incident to parturition. Such men were eminently capable of doing good vaginal work, and when other methods of delivery had been tried and failed, he would not hesitate to trust any of these men to do either a vaginal or abdominal Cesarean section.

#### THE SYMPTOMS AND ULTIMATE TREATMENT OF HYDATIDIFORM DEGENERATION OF THE CHORION, WITH REPORT OF A CASE.

DR. J. E. STOKES, Salisbury, North Carolina, stated that as the process of hydatidiform degeneration of the chorion was a rare condition and followed not infrequently by a most malignant and rapidly growing neoplasm, immediate recognition

of which was essential to the relief of the patient—the report of a single isolated case might not be without clinical value and of pathological interest.

The patient was a young, white, married woman, age nineteen years. Family and past histories negative, while the menstrual history was normal to within three months of her present illness. For the first six months after marriage the patient had her periods regularly. Then she had amenorrhea for three months, with the following symptoms: The presence of a thin watery blood-stained fluid, which started two weeks after the first period was missed, then ceased up to within a few weeks of present illness, when it became of a dark red color, hemorrhagic in character. There was headache with nausea and vomiting, dull aching pain over the entire body, with sharp cutting paroxysms of pain through lower abdomen. One night suddenly there was a profuse flooding, a pint or more in quantity, from the vagina. There was also considerable pain of a bearing-down expulsive character through the pelvis. Patient became extremely pale; pulse 140, weak and irregular, with some rise of temperature and cold clammy external surface. Vaginal examination showed the fundus enlarged much beyond the size of a four months' pregnancy. Owing to the unusual size of the uterus for that period of gestation, the profuse hemorrhage following a previous watery blood-stained fluid and the pain immediately over the uterus and the elevation of temperature, the uterus was emptied.

The specimen obtained, on gross appearance, consisted of myriads of glistening cysts. These vesicles hung in bunches, grape-like in appearance. A few of them were covered by thin gray fleshy substance, while the cysts were firmly distended with a clear viscid fluid.

The histological examination showed the chorionic villi of a degenerate appearance. The syncytial layers of many villi were absent and the stroma was of a myxomatous character, with many small degenerate nuclei; while other villi had normal stroma with both the two layers of cells well defined. This examination showed the diagnosis to be plainly that of hydatidiform mole.

The patient reacted from the operation satisfactorily, but the pulse remained rapid; there was some elevation of temperature and considerable pain through the abdomen. In a short time there was an escape of blood from the vagina, which continued, being more marked at night than during the day. It was, therefore, deemed advisable in a week or so to investigate the interior of the uterus again, so a cautious curettement was done. By this curettement a dozen or more soft vascular, nodular masses covered by endometrium of normal thickness and filled with blood-vessels, were brought away. Microscopically the specimen showed the epithelium undergoing more marked and active proliferation than in the section of the mole. Notwithstanding the

fact that the second specimen showed a more active proliferation of the cells of the epithelium, and, again, that in at least two places these proliferating cells penetrated deeply into the endometrium, both of which facts are indicative of the malignant nature of a vesicular mole, the patient showed steady improvement, gained in weight, the uterus contracted, the bleeding ceased, and there were no indications of metastatic formation, so that the more radical operation of hysterectomy was not advised.

This patient was finally examined four months later and was found to be in excellent general condition; had gained a number of pounds in flesh, and had just passed through a normal menstrual period. The vaginal examination showed the fundus to be small, contracted and regular in contour.

Regarding the etiology, though this point was not definitely settled, authorities rather lean to the belief that the primary changes take place in the ovum, and that the endometritic changes are only secondary.

Again, as regards the relation of hydatidiform moles to malignancy, there were many points yet undetermined, but it was agreed by all that there was a very close relationship between the occurrence of hydatidiform mole and the appearance later of a malignant neoplasm. The two special theories advanced regarding the malignancy of the vesicular mole were, 1. that there were two distinct forms of mole, malignant and benign, while the other theory was that all moles were malignant and that the malignancy manifested itself through a portion of the mole being left behind in the uterus. The percentage of deciduomata preceded by occurrence of vesicular mole was universally recognized as about 40 per cent.

The four most distinct symptoms in their order of positiveness, though not always constantly present, were, 1. the pink, watery discharge; 2. enlargement in contour of uterus; 3. hemorrhage; 4. tenderness over the uterus; 5. presence of mole by internal palpation.

A positive diagnosis could always be made if the discharge contained any of the vesicles; the discharge was watery, blood-stained in character, and when the vesicles were discharged with it the picture had been aptly likened to "white currants floating in red currant juice." Hemorrhage should always be taken as an important sign when occurring in a uterus whose size was larger than expected for that period of gestation, or in which the rate of the growth of the uterus had been noticeably rapid. The second and third months were the most frequent ones in which the hemorrhage occurred. Tenderness over the uterus had been noticed as a distinctive occurrence in a number of cases.

The diagnosis was seldom positively made until the expulsion of the mole or until its presence in the uterus was made out through internal palpation; but the presence of the mole should always be suspected on the appearance of the characteristic dis-

charge or after a severe hemorrhage in an unduly enlarged, soft or rapidly growing uterus. The main point regarding the prognosis was that from 10 to 16 per cent. of hydatidiform moles underwent malignant degeneration; also, that in a certain number of cases an early diagnosis following the very onset of symptoms was absolutely essential for the permanent relief of the patient.

The author divided the treatment into the immediate and ultimate. Under the first head came those cases in which a positive diagnosis of the presence of a vesicular mole had been made. In these cases it was universally agreed that the mole should be removed immediately. The greatest care must be exercised in not perforating the wall of the uterus; in fact, it was advisable not to use any instrument, but to rely upon the finger and gauze. The uterus should then be most carefully explored with the finger for any particles of the growth cleaving to the wall; then the cavity should be irrigated and lightly packed with gauze.

The ultimate treatment had to do especially with the appearance of malignancy following the occurrence of hydatidiform mole. The greatest caution and watchfulness for the indications of malignancy were to be exercised in the ultimate treatment of the patient, who should be carefully watched and examined at intervals irrespective of her apparent improved condition or freedom from all symptoms. If there was any invasion of the vagina or vulva the nodule should be removed and histological examination made. If there were any distinct lesion of malignancy found to be present in these nodules, immediate removal of the uterus was indicated. At least, once a month or more following the expulsion of a vesicular mole, the uterus should be thoroughly examined and cautiously curetted, and the scrapings examined microscopically. If the specimen thus obtained from the uterus suggested the slightest active proliferation of the chorioepithelium, the patient should be continually watched or the uterus removed at once.

#### OFFICERS.

The following officers were elected for the ensuing year: *President*, DR. W. O. ROBERTS, Louisville, Kentucky; *First Vice-President*, DR. JOSEPH C. BLOODGOOD, Baltimore, Maryland; *Second Vice-President*, DR. LEWIS C. MORRIS, Birmingham, Alabama; *Treasurer*, DR. WM. S. GOLDSMITH, Atlanta, Georgia; *Secretary*, DR. WM. D. HAGGARD, Nashville, Tennessee.

Nashville, Tennessee, was selected as the place for holding the next annual meeting.

## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON OBSTETRICS AND GYNECOLOGY.

*Meeting of November 26, 1909.*

J. O. POLAK, M. D., *in the Chair.*

#### LIPOMA OF THE LABIUM MAJUS.

DR. A. STURMDORF presented this specimen. This was one of the rarest of gynecological affections and represented a most unusual dystocia. Up to 1906 Kelly could collect only twenty cases from the scattered literature; these he tabulated in the Johns Hopkins Hospital reports, Vol. 3, page 321. He stated that "no writer had as yet recorded more than a single instance in his own practice." In this published series of cases, Kelly's was the only one in which the tumor obstructed the vaginal outlet during labor.

Lipomata of the labia majora presented the same characteristics as lipomata elsewhere. Their density and resistance depended upon the predominance of their fatty or fibrous elements. They might project from a broad base involving the whole labium, as in this case, or the growth might be suspended by a more or less attenuated pedicle which in one case extended upward into the inguinal canal, simulating a hernia.

Goodell of Philadelphia reported a case in which the growth, springing from a broad pedicle, extended to the patient's knees. Headley of Melbourne removed a lipoma of the labium majus which weighed twenty-four pounds.

The tumor Dr. Sturmdorf presented was extirpated from a primipara, thirty-six years old, who was referred to him in labor because of an obstructed outlet. She claimed that she had carried the growth for eight years without discomfort. The tumor was quite hard and resisting, very slightly movable, attached by a broad base involving and obliterating the outlines of the left labium majus. Its surface was transversed by an extensive network of tortuous and dilated veins. It measured 12.5 cm. in length, 10.5 cm. in diameter and 29.5 cm. in circumference.

The fetal head was pointing at the vaginal outlet; here it was arrested by the projection of the growth on the left, and an old ankylosis of the hip-joint on the right.

The removal of the growth permitted the prompt spontaneous delivery.

## ADENOCARCINOMA OF THE CORPUS UTERI.

DR. A. STURMDORF. Palmer Findley stated that in carcinoma of the body of the uterus one saw a great variety of histological forms. In general there were found the adenocarcinoma, the alveolar, and very rarely the squamous celled type.

Adenocarcinoma might assume a type sometimes spoken of as *malignant adenoma*, i.e., a glandular overgrowth in which the greatly increased glands invaded the musculature of the uterus. It was difficult to differentiate such an early malignant adenoma from an advanced type of hyperplastic glandular endometritis, termed benign adenoma.

The specimen submitted presented the typical form of adenocarcinoma where, in addition to irregularity in outline and great increase in the number of glands, the epithelium proliferated, forming multiple irregular layers invading, but limited to, the corporeal structures of the uterus.

The history of the case in brief was as follows: The patient was a widow, fifty years of age. The family history was negative. She had had two children, eighteen and twenty years ago; the labors were normal. She never miscarried. Fifteen years ago she had malaria. Her menstruation began at the age of thirteen; it was of the twenty-eight day type, lasting two or three days without discomfort. The menopause occurred twelve years ago. The patient claimed that, barring annoyance from a vaginal discharge, alternately leukorrheal and bloody, existing for ten years, she had never experienced discomfort or pain.

On examination, the cervix presented a normal appearance; the uterus was somewhat enlarged and boggy; the adnexa were free. An examination of the scrapings prompted a total hysterectomy, this was performed June 10th of this year. The extirpated uterus presented the following features, according to the pathologist's report.

The specimen consists of uterus and a small strip of vagina attached. The uterus measures 9 cm. in length, 6.5 cm. between the cornua, and 4.2 cm. in thickness. The uterine canal is the seat of a granular friable papillary tumor mass, made up of innumerable small elevations raised above the surface from a fraction of a millimeter to several millimeters, and continuous below in a common base. By coalescence of some of these, larger knob-like elevations have formed.

The mucosa of the body of the uterus is entirely replaced by the cancer growth, which extends as far down as the internal os, and there stops, leaving the cervical canal and vagina free from involvement.

The tumor extends for quite a distance into the wall of the uterus, in places composing one-half of the wall thickness, but in no place does it reach the surface.

Sections show a typical adenocarcinoma, made up of glandular spaces of varying shapes and sizes, lined by one or many layers of

cells, irregularly placed upon one another. The tumor penetrates deeply the muscle tissue. It is preceded and surrounded in its down growth by an infiltration through the muscle tissue of many leukocytes and small, round cells and plasma cells. The marked proliferation of the gland epithelium has produced many bizarre forms of glandular spaces. The cells lining the spaces are of the high columnar epithelium type, resembling those found in the uterine mucosa. Mitotic figures are not uncommon. Degeneration has taken place in many areas and degenerated cells fill many of the spaces.

Carcinoma of the corpus uteri, and especially adenocarcinoma, is extremely insidious and slow in its development, and, as in this case, usually many years elapse before symptoms pointing to the possible existence arise. Fortunately, these growths were not very prone to metastases and a complete hysterectomy holds out the greatest probability of permanent cure.

#### INTERSTITIAL ECTOPIC PREGNANCY AND TUBO-OVARIAN ABSCESS IN THE SAME PATIENT.

DR. A. STURMDORF.—The patient was twenty-eight years of age, married four years, and stated that she had never before been pregnant, that she had never been confined to her bed by illness, and insisted particularly that she had never suffered from any gynecological affection whatsoever. Her menstruation began when she was fifteen, and was rather scant, somewhat painful, and was frequently delayed from three to six days.

She had last menstruated regularly seven weeks prior to his first examination, and she admitted that when two weeks overdue, suspecting pregnancy, she submitted to an attempt at artificial abortion. This resulted in merely producing an irregular, occasionally profuse, painless flow which had continued during the following four or five weeks. Her temperature was normal, her pulse was slightly accelerated, and anemia was not very marked. The hemoglobin percentage was 65 and there was no leukocytosis. There was no abnormal tenderness.

Upon examination, the uterus appeared normal in dimensions and consistence, immovably attached to its left side was an irregularly shaped, soft, elastic mass filling the left lower pelvis. The right side presented nothing abnormal. The history, the symptoms, and the mass seemed to make the diagnosis of ectopic pregnancy a logical conclusion.

Abdominal section, however, revealed the uterus to be completely embedded in extensive organized adhesions. The mass to the left which had been interpreted as the gestation sac proved to be an old tubo-ovarian abscess, while the junction of the opposite cornual area with the tubal isthmus presented the soft bulging of the existing ectopic shown in the specimen.

Where they expected to find the ectopic they found an abscess. Where they expected nothing they found the most dangerous form of ectopic pregnancy. Furthermore, the complete absence

of all signs and symptoms pointing to the existing extensive results of previous infection were worthy of comment.

ON THE INDUCTION OF LABOR AND MANUAL DILATATION OF THE  
CERVIX BY HARRIS'S METHOD.

DR. H. M. LITTLE of Montreal, Canada, read this, the paper of the evening. He said that during the past few months the tabulation of the statistics of some forty cases of eclampsia and a compilation of the medical report of the Montreal Maternity Hospital for the past year had given him an opportunity to become familiar with certain features of the general work which had impressed him strongly. Two of these features which stood out strongly and seemed most worthy of attention were, the results of the induction of labor, and those of accouchement forcé by the Harris's method.

Records of 3,000 cases in Montreal showed an average of about 11 per cent. of contracted pelves. During the past year he found that with eighty-seven contracted pelves there were seventy normal labors, and but seventeen instances of dystocia. That is, 80 per cent. of the labors terminated without interference. If they considered that normal labors occurred in 80 per cent. of the 11 per cent. of all cases in which the pelvis was more or less contracted, it was a simple deduction to see that pelvic dystocia was to be expected in about one of fifty cases; and if they excluded from these, those in which forceps or version might be employed with advantage, the chances of serious pelvic dystocia were seen to be extremely remote. Owing to the success of certain advances along surgical lines, pubiotomy and the various modifications of abdominal section, they owed the favorable reception of two other operations, multiple incisions of the cervix and the so-called vaginal Cesarean section. It was on account of the widespread notice that these two operations had obtained that he brought before the Section the results gained by two other and older operations which had fulfilled all purposes. He referred to the favorable results gained by the induction of labor and manual dilatation of the cervix.

Dr. Little said he had been impressed by the number of cases of dystocia on account of the birth of a child unusually large or exceedingly heavy, even though the pelvis was normal.

Vaginal Cesarean section had been recommended in cases where the cervix was rendered abnormal by carcinoma, fibroids, or extensive scars. It had also been suggested in cases of eclampsia, placenta previa, heart disease, nephritis, chorea, vomiting of pregnancy, tuberculosis, and intrapartum infection.

Labor had been induced forty-five times in the series of 3,000 cases. The method employed was as follows: The vulva was first shaved and cleansed. The cervix was exposed and its anterior lip was fixed with a tenaculum. The bougie used was a moderate-sized rectal tube, about 25 cm. long, in which holes, about  $3/10$  cm. in diameter, were made at intervals of

about 5 cm. This was fixed upon a flexible metal director inserted about 5 cm. from its tip. The metal director served to hold the bougie steady during its passage into the cervix, and after director and bougie had passed into the cervix the director was steadied and the rubber tube shoved up between the membranes and the uterus by means of long forceps. The director was then reinserted into the next opening of the tube, passed up until it was well within the cervix, and the tube again shoved off up into the uterus. In this way it was possible to pass in the tube as if it were solid and yet allow the freest of excursion once it had gotten between the uterus and the membrane. The softness of the tube precluded the possibility of perforation of the uterus and the membranes were never ruptured. The average time from the introduction of the bougie till the onset of labor was six and a half hours. In spite of the early onset of pains in the majority of the cases, it was found necessary to interfere for the completion of labor in about one-half the cases. Nineteen of the forty-five cases died, but as the operation was in by far the greater number of cases undertaken in the interest of the mother, this showing was relatively good, particularly when the deaths were analyzed.

Accouchement forcé, or so-called "bloodless" dilatation of the cervix by Harris's method, had been employed on fifty-two occasions; two more cases were added where dilatation was accomplished by means of the Pomeroy bag. The indications were, eclampsia, fifteen cases; to terminate labor after induction, eight; placenta previa, eight; toxemia, to shorten labor, four; danger to the mother or child during labor, nine; prolapse of the cord, three; transverse presentation, two; fever intrapartum, two; extreme rigidity of the cervix, one; other causes, two; a total of fifty-four cases. There were five deaths, three cases of eclampsia, one case of placenta previa, and one after pubiotomy. In the fifty-two cases operated on by the Harris's method but fourteen, or 29 per cent., escaped without a certain amount of laceration. In the two cases in which the Pomeroy bag was used there was more or less tearing of the cervix. Two dangers of manual dilatation, hemorrhage and infection, had not been noted to any extent. A total of twenty-eight normal puerperiums in forty-nine cases, 57 per cent., was not unsatisfactory, particularly as seven of the eight moderately high temperatures after the use of Harris's method were noted three times in association with placenta previa, twice where they had high fever before the operation was undertaken, once in a case of pyelonephritis, and once after the placenta had been removed manually.

#### CONCLUSIONS.

It would be seen that the induction of labor and occasionally the completion of labor by manual dilatation offered an alternative to surgical procedures in the treatment of many of the

graver complications of labor. These two operations not only were simple but were capable of application under almost any circumstances and were so simple that they might be employed by a practitioner even without the aid of assistants.

When carefully employed they were practically devoid of danger and had the advantages of being not only of wide application but of almost universal use in that the manual dilatation of the cervix must be completely employed as a preliminary to either operation with forceps or version.

Where carefully employed the maternal mortality should be nil, though particularly in the induction of labor there might occasionally be deaths from too long delay before labor was induced.

The same however would apply no matter how the patient was delivered, for once the bougie was inserted it was but a short time until the patient either delivered herself spontaneously or could be delivered by other methods.

DR. J. CLIFTON EDGAR congratulated Dr. Little upon the general conservative atmosphere that pervaded his paper. It had always been interesting to note the factors which influenced us in making a selection of a method for inducing premature labor, and he thought that precedent had something to do with this selection. Local prejudice also had something to do with it. One's experience also came into play. It seemed to Dr. Edgar that if one had much experience with the use of the bag of Champetier de Ribes in the induction of premature labor, he would cling to this method. However, the method proposed by Dr. Little, a modified Krause method, appealed to him, although there was connected with it a certain amount of uncertainty. Dr. Little used a large bougie and introduced it high into the uterus and caused the induction of labor within an average of six and a half hours; usually the maximum of time for the induction of labor was twenty-four hours. Dr. Edgar said he would take pleasure in ordering two or three of these rectal tubes and try them; this seemed to him to be rather a conservative way of inducing labor. Whatever method for inducing labor was employed, Krause's or any other, it seemed to him that it depended upon the intrinsic irritability of the uterus. Take for instance two cases, one a primipara, the other a multipara; introduce in each the same sized bag; in each case the primipara may have labor induced before the multipara much to one's surprise. In some instances there would occur a very short labor. In others a very long one. It was the condition of the uterus itself that counted, and not so much the method employed. The general results obtained by Dr. Little he considered excellent, and especially in the care of the cardiac cases. One should endeavor to shorten the second stage of labor in such cases.

With regard to accouchement forcé, an old expression was that "all roads lead to Rome" and all methods employed become after all a personal equation; all these methods have their use;

one would get good results with one method, and another person would get similar results with another method. Dr. Edgar obtained his best results with the use of the Pomeroy bag in accouchement forcé. His experience, however, had been very similar to that of Dr. Little; one could not rely upon the Pomeroy bag to open up the uterus three and a half or three and three-quarter inches within an hour without lacerating the cervix.

Dr. Edgar said he was in accord with the reader of the paper in his statement that in obstetrical emergencies which demanded very rapid dilatation of the cervix, the choice of operation should depend upon the condition of the cervix. It was rather interesting, however, that in New York they met with cervixes that were very resistant, and it seemed to him that there should be no choice of any one method. It was to be borne in mind at all times it was the rigidity of the cervix that was to be overcome, and which caused the danger.

DR. JAMES W. MARKOE said that the old Krause catheter had been introduced into the uterus for the production of premature labor without the best results, and he believed that with the new method with a rectal bougie better results would be obtained. During the past few years he had been in the habit of packing the cervix with iodoform gauze, packing it in well up, with the patient upon her back; he packed it in as tightly as he could. This had been a very serviceable method with him. However, this method with the rectal tube seemed to be of better service and induced labor quicker than with the small bougie.

The induction of labor was not often carried out at the Lying-in Hospital; out of about 60,000 there had been but 256 patients on whom labor had been induced. This was a very small number, but they should remember that the cases came in late and this would account for the small number.

With regard to accouchement forcé, where forcible dilatation of the uterus was required, in the hands of the inexperienced it was a very dangerous method and, therefore, should be done as little as possible. Among the 60,000 cases at the Lying-in Hospital, this operation had been performed but about 648 times. The cases calling for it were very varied. In one case, for instance, a woman had a cervix dilated to about two fingers and under her bed was a pool of blood. This was a case of central placenta previa. The immediate delivery of the child called for a true accouchement forcé. When this was performed with the use of the bags, it was a slow process; his idea of the term accouchement forcé implied that it must be done rapidly. This operation was done in cases of placenta previa, eclampsia, cases that demand an immediate delivery of the child. At the Lying-in Hospital he usually used a steel dilator where the cervix was undilated before performing manual dilatation. The danger was not so much from the dilatation as it was in the extraction of the child through the rapidly dilated cervix.

Dr. Markoe said he was delighted to hear the statistics from

Montreal; he heartily agreed that too much surgical work was done and for the induction of labor or accouchement forcé should be more often employed, and would give better results when properly performed. It should, however, be done with great care. If improperly done, there was great danger attached to its performance.

DR. CHARLES JEWETT said the Section was greatly indebted to Dr. Little for an interesting and instructive discussion of his subject.

The induction of labor by obstetric methods, properly carried out, is practically without maternal mortality. Yet the speaker had lost one case by pulmonary embolism which he had attributed to the intrauterine use of the bougie. There are, too, no fetal deaths that can properly be charged to interruption of pregnancy when it can be done within the last two or three weeks. In contracted pelvises the operation while it had not a large field he believed held an important place in obstetric surgery.

Four principal methods are at our disposal: the Krause method, the hydrostatic bag, manual dilatation, and vaginal Cesarean section. The choice must depend upon the individual case. Krause's method he had employed more frequently than the others. In most cases the labor terminates within twenty-four hours.

The inelastic water-bag is quicker than the bougie. Dr. Pomeroy with his bag has completed the dilatation in favorable cases within one hour. Skill is required to make it thus speedy and at the same time safe. In many cases of placenta previa this is the ideal method, especially in hemorrhage with undilated cervix. In the interest of asepsis it is better passed within the amniotic sac and it controls the bleeding better.

Manual dilatation is sometimes better than the bag or the bougie.

Vaginal Cesarean section finds its chief indication in eclampsia with rigid cervix. This is especially true prior to the last one or two months, when extraction is easy.

With reference to the technic in the use of the bougie, Dr. Jewett had not found it necessary to use an anesthetic. The patient is placed in the Sims position, the cervix exposed and drawn forward in the usual way. He uses two bougies, the largest that can be had. Dr. Little's rectal tube will no doubt be a gain over the bougies commonly employed. The knob is removed from the proximal end and a stylet introduced. The distal end is bent nearly at a right angle, making a large sweep about three or four inches from the end. This passes easily the angulation at the junction of cervix and lower uterine segment. As the bougie enters the uterus the stylet is withdrawn about one inch and the soft nose of the bougie finds its way between the membranes and the uterine wall without risk of harm. The speaker did not remember having ruptured the membranes with this technic. The instrument is pushed up

gently till resistance is felt, then the stylet is withdrawn and the rest of the bougie is fed into the uterus, inch by inch, catching it near the cervix with a Keith clamp. Most of the bougie he assumes is coiled up in the lower segment where it is most effective in provoking pains.

DR. GEORGE L. BRODHEAD said that years ago, when he had been at the Sloane Maternity Hospital, the bougie was almost invariably used for induction of labor, but the membranes were ruptured so frequently that when the de Ribes bag method was brought into use, he had tried it and had been using it ever since. Prolapse of the cord had occurred in two or three instances, but the use of the bag had been as a rule a valuable, reliable method of procedure and, so far as the maternal mortality was concerned, there was none at all.

With regard to accouchement forcé, he believed that prior to the operation, in cases of eclampsia for example, the use of the balloon was advisable in order to obtain both softening and dilatation, for the cervix in some of these cases was very rigid. In placenta previa he was afraid to use accouchement forcé, but he congratulated the reader of the paper upon the results he had obtained in such cases. He preferred to use a Champetier de Ribes bag until good dilatation of the cervix was obtained, then the foot should be brought down and the child extracted very slowly. Rupture of the uterus had occurred very frequently during the rapid dilatation of the cervix and subsequent extraction in placenta previa, and he believed that, generally speaking, it would be safer to use the bag, or even to do version with slow extraction, than to resort to accouchement forcé.

DR. FRANKLIN A. DORMAN said

The induction of labor was indicated, even in a relatively large pelvis, when the woman was at term, when there was an excessively large child. The words in the paper sounded the keynote of the situation when the statement was made that these patients should not be allowed to go beyond a few days after term. At term the results were good in such cases. Many multiparæ, if advised to take a good dose of castor oil, given a little digital stretching of the cervix, would go promptly into labor. This was a simple method of inducing labor. If the women were not at term, it was more difficult to bring on labor and get good results because of the poor muscular action. The labor would drag along and the women would often play out before the long uterine segment was dilated. Manually, one might then be unable to get the child out. In such cases one was occasionally justified in making a section of the lower segment of the uterus.

In the cases of rigid cervixes seen in eclampsia, the long and thick cervixes, where one wished to get a softening of the cervixes, it could be accomplished by the use of the bag better than by the use of the bougie; it produced a mechanical action not obtainable by the bougie. The bag certainly had an advantage

over the bougie although the uterus was more responsive to the latter. In cases of placenta previa one should not omit the use of the dilating bag. Such patients should be carefully watched. If one attempted to dilate the cervix manually, there was liable to occur a tear of the cervix. Dr. Dorman had seen many cases of ruptured uteri where the operators did not realize that they were tearing it.

DR. ROBERT L. DICKINSON said that two weeks before term one could with advantage, under the guise of an examination, strip the membranes in most primiparæ, and even in multiparæ, and always when a large child was anticipated, and thus induce labor. We lose far too many first children, mostly from over-development. He felt very grateful to Dr. Little for introducing the use of the rectal tube. Dr. Dickinson said he had ruptured the membranes with Krause's bougie, and once loosened the placental edge. The x-ray has taught us that any attempt save by the proctoscope to pass the rectal bougie well up into the colon would coil it in the rectum. The same thing would occur, he believed, when it was introduced into the uterus, and he did not believe it was as dangerous as the bougie. As to accouchement forcé there is not one of the methods by which one dilates the cervix but what brutally contuses the parts and leaves a thick-edged external os, not effaced, never taken up. He said he had taken a strong stand against the use of the Bozzi dilator. He preferred to use manual dilatation by Edgar's method when one feared to displace the engaged head. Pomeroy's bags had a field of usefulness in placenta previa. Time was an important element in these cases. There was usually a rigid cervix in cases of six to eight months eclampsia. He knew of no method so satisfactory of dealing with this ring of gristle as the cutting operation.

He called attention to the fact that all grave obstetric cases should go to hospitals, as all other serious surgery does, and that the little hospitals with which the country was being peppered would provide the means in time.

DR. ASA BARNES DAVIS said that his experience with the use of the bougie in these cases showed that it was uncertain in its action. He had used for a long time packing with gauze to the exclusion of everything else. He packed well through the cervix as far as he could possibly, plugging the cervical canal and vagina as well. This he considered a very essential thing to do in inducing labor. His experience with the Pomeroy bags had been of a very limited nature. He had found that packing with gauze was very satisfactory and very efficient. They met with cases where it was necessary to empty the uterus rapidly; the element of time was a very important matter in some cases. In such cases one could not wait for the action of a bougie. Often dilatation was a very difficult thing. As a matter of fact, a large number of so-called dilatations were not

dilatations at all. One could not dilate more than four fingers without tearing the cervix.

As to the vaginal Cesarian section, it was an easy matter to open the uterus by means of an incision; but it was a difficult matter to repair a cervix and uterus afterward. Sometimes the tear extended in the direction of the incision; if it extended laterally one was apt 'to tear into large blood-vessels when one would meet with an alarming hemorrhage.

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## REVIEW.

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ABHANDLUNGEN AUS DEM GEBIETE DER GEBURTSHILFE UND GYNAKOLOGIE. Mitteilungen aus der zweiten Frauenklinik der Koenigl. Ung. Universität zu Budapest. Herausgegeben von PROF. DR. W. TAUFFER, Direktor der Klinik. Band L, Heft 2. Berlin, 1909. Verlag von S. Karger.

As the title indicates, this volume is devoted to the publication of work done under the auspices of the Budapest University.

Dr. Stephan v. Toth writes on Hebosteotomy. With a material of from 2,400 to 2,600 confinements annually, from 1905 until the present time, the operation has been found necessary but ten times. In contracted pelves, perforation of the living child has not been entirely discontinued. From an analysis of one of their cases, the conclusion is reached that in instances of greatly cicatrized cervices in multipara, the operation is dangerous. They delivered eight living children from the ten patients.

Hebosteotomy, in its practical application, rivals Cesarean section for the relative indication. It is an operation that should be done only in hospitals and be limited in its performance to specialists.

Paul v. Kubinyi describes a number of interesting, technically difficult abdominal hysterectomies, but there is nothing novel or new in the procedures mentioned. No hard and fast rule can be laid down for such work; and the experienced operator must necessarily model his technic according to the conditions found. For obvious reasons, abdominal operations are more in favor than vaginal operations. In conditions which are likely to be difficult to cope with, the transverse incision of Pfannenstiel should not be used.

Elmér Scipiades reports that since September, 1881, in 2,210 abdominal sections, ten injuries to the ureters occurred. In partial divisions of the ureter, if observed at the time of occurrence, one is justified in doing a direct suturing of the ureteral wound. The entering of the lumen by sutures must be avoided. In case that the edges of the wound have been bruised, the direct union is not applicable; then an invagination is better. The priority of end-to-end ureteral anastomosis, done with success in the human subject, belongs to Tauffer. His first operation being done in 1885.

Tauffer's technic was and is: The two ends of the cut ureter are drawn over a piece of ureteral catheter which is fixed with a suture. The catheter-piece, four centimeters in length, is cut off obliquely at its ends. With very fine silk and an intestinal needle, the walls of the ureter are sutured over the catheter, beginning at the base. The sutures should not penetrate the mucosa, and they should not be tied until all sutures have been placed. Before tying the last three or four sutures, the catheter-piece is extracted by pushing it upward with a pair of forceps until the end is at the ureteral opening, when it is readily removed with the aid of the suture that was passed into it. Now the remaining sutures are tied. Supplementing the first row of sutures, another row of very fine sutures is placed taking in the periureteral connective tissue. Tauffer's should always be the method of choice when an end-to-end anastomosis is indicated.

In instances in which an anastomosis or a vesical implantation cannot be done, an immediate extirpation of the kidney should not be undertaken. A ligation of the proximal end of the ureter is to be preferred, with placing of the ureteral pedicle in such position that it can be readily reached if need be; because sometimes the other kidney takes up the function of both, without a detrimental effect being caused to the other kidney, and thus a nephrectomy may become entirely unnecessary.

Ueber die Anwendung von Skopolamin-Morphin bei Geburten an der II. Universitätsfrauenklinik von Joseph Frigyesi reports a favorable experience with skopolamin-morphine in labor. Properly used, the pain is not only lessened in the majority of patients, but is usually entirely deadened, without detriment to the patient. BOLDT.

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## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS.

**Dystocia Due to the Cord.**—Henri Berthier (*Gaz. des Hôp.*, Sept. 9, 1909) says that labor may be delayed by the structure of the umbilical cord. It may be so short as to prevent the descent of the fetus. In this case the mother feels a constant pain in the uterus. A marginal insertion of the cord or a low insertion of the placenta may cause dystocia. There may be adhesion of the cord to the placenta or the fetus. When the cord is too short the pains are weak and irregular, labor is long, dilatation poor, and pain severe. Operative interference may be necessary to deliver the patient. If the placenta becomes separated hemorrhage is severe; inversion of the uterus may result from traction on the cord. The cord may even be ruptured during the descent of the fetus. Short cord favors deflexion of the head, and breech or shoulder presentation. Another form

of dystocia may be due to the winding of the cord about the body or neck of the fetus. It may cause intrauterine amputations, or strangling of the fetus. Pressure of the fetus on the cord causes stasis of the circulation or anemia of the bulbs and cerebral centers of the child, and death results. The most important etiological factors are narrowing of the pelvis and low insertion of the placenta. Prolapse of the cord is another complication of labor. It seems to be of little use to replace the cord, if it has become prolapsed, since it cannot be maintained in position except by the use of a balloon, which at the same time hastens dilatation. Labor must be hurried in whatever way is possible. Some authors believe it to be an indication for an immediate Cesarean section, no matter what is the amount of disproportion between the pelvis and the fetus.

**Treatment of Puerperal Convulsions.**—From a study of forty cases of eclampsia, H. M. Little (*Jour. Obst. Gyn. Brit. Emp.*, September, 1909) has evolved the following general rules for treatment: Minimize the use of narcotics and anesthetics. Chloroform is rarely indicated for the control of convulsions, but should be used when general anesthesia is required for examination or delivery. Immediate delivery is advisable, particularly when the child is viable. In the majority of cases the onset of labor is more or less intimately associated with the onset of convulsions; accouchement forcé—preferably Harris's method followed by version—has given the best results. Immediately after delivery, if not before, the stomach should be washed out, and several ounces of magnesium sulphate, well diluted with warm water, should be introduced through the tube. The patient should then be sweated by means of a hot-air bath or hot pack. If convulsions recur after delivery, and particularly in post-partum eclampsia, the best results are obtained by withdrawing 700 to 900 c.c. of blood from one of the veins of the forearm. A large quantity of fluid (forced fluids) should be given for several days, and the amount so given should be carefully tabulated for comparison with the amount of fluid eliminated in the urine and stools. If the excretion is inadequate, repeat the sweating and purgation. Do not allow the patient to become water-logged. Careful records of ingestion and excretion should be kept for at least ten days, as the involution of the uterus has a marked effect on the general metabolism, particularly between the sixth and ninth days.

**Chorioepithelioma Developing in Connection with Birth of Living Child.**—In view of the fact that this growth is usually associated with vesicular mole, interest attaches to the case recorded by H. T. Hicks (*Jour. Obst. Gyn. Brit. Emp.*, September, 1909) in which a living child was delivered at the eighth month, "covered with a shiny brownish material." The placenta was very dark colored and only about the size of the palm of the hand. There was no excessive hemorrhage. Severe pain in the left renal region beginning in the eighth month, slight uterine

hemorrhage three weeks after labor, then rapid wasting, jaundice and abdominal distention and pain and tenderness in the liver were the chief symptoms. Metastases were found in the lungs, pleura, liver, kidneys, spleen and thyroid. The uterine cavity was free; its wall contained one necrotic nodule.

**Peripheral Neuritis of Transitory Type in the Puerperal State.**—E. Bonnaire and Rosenzmitt (*Presse Méd.*, Sept. 18, 1909) state that we see not infrequently transitory paralysis and hyperesthesia of some muscles following labor. These have been credited to pressure during the labor; but the authors believe that the evidence is against this conception. They occur just as often in cases of easy labor in which there has not been much pressure. They also occur in nerves which are so located as not to be exposed to pressure. The writers believe that they are really due to neuritis caused by absorption of toxins resulting for the involution of the genital organs. They occur most often in the lumbar muscles, less often in the front of the thigh. The symptoms are pain on pressure, paresis, cutaneous hyperesthesia, and severe spontaneous pain. The seriousness of these cases of neuritis lies in the fact that they may be mistaken for phlebitis, and the wrong treatment applied. In case of phlebitis immobilization is in order to prevent cerebral embolism; but in neuritis massage and electricity are in order after the acute stage is over, and if this is not given a condition that is comparatively slight may end in permanent paralysis.

**Bacteriological Examination of the Normal Lochia.**—Ercole Cova (*Folia Ginecologia*, vol. ii, part i, 1909) examined the lochia in twenty perfectly normal puerperal patients, who had absolutely no rise of temperature, to ascertain the bacteriological condition of the secretions. He found, as have others, that in the physiological uterus the cavity contains no germs, while they are habitually present in the vagina and vestibule. For the first twenty-four hours the lochia is perfectly sterile, and only later do the germs appear, and they are those that are habitually found in the vagina. Not all the germs present in the vestibule are found in the vagina. For instance the bacillus coli is less frequently in the vagina than on the vulva. They seem to be the germs that have remained in the crypts and hollows of the mucous membrane of the vagina. The vaginal flora represent various kinds of cocci, especially diplococci, which are simply saprophytic in the vagina and quite nonvirulent. The germs of the vestibule are more numerous. Some come from within, some from without, the vulva. The bacillus coli may be easily demonstrated, and may ascend into the vagina.

**Delivery by Rapid Dilatation of the Cervix.**—Paul Bar (*L'Obstét.*, Sept., 1909) gives three methods of rapid dilatation of the cervix to be used in cases in which it becomes necessary to deliver with a nondilated cervix. They are: introduction of a Champetier de Ribes balloon into a partially dilated cervix; digital dilatation; and the use of a metallic dilator like that of Bossi. The indica-

tions for rapid dilatation are eclampsia, hemorrhages from placental site, retroplacental hemorrhages, cardiac or renal disease of the mother, prolonged labor threatening the life of the child, prolapse of the cord, rupture of membranes after death of the fetus, and putrefaction of the amniotic liquid. Any of the methods of dilatation mentioned is liable to result in tearing of the cervical tissue which tear may extend during extraction, and cause hemorrhage and infection. These lacerations, badly cicatrized, become the cause of ectropion of the cervix, secondary infection of the uterine walls, and cervical metritis. Dilatation by these methods does not remove all obstacles to delivery, and a certain amount of contraction occurs after the instrument is removed. The operation should never be undertaken except when specially indicated. Dilatation with the balloon carefully carried out is less dangerous than the other measures. Manual dilatation is less powerful and rapid than Bossi's dilator, but more safe. Other operations that may be made use of in the same conditions are Cesarean section with partial hysterectomy, classic Cesarean section, and suprasymphyseal Cesarean section. When we have enough dilatation to introduce a balloon, this is to be preferred to a vaginal section, since it will produce smaller wounds of the cervix. When there is no dilatation at all this condition is equally unfavorable to the section. The vaginal section should not be made use of when the fetus is very large, when the placenta is inserted low down, or when a difficult extraction is probable. Cesarean section with partial hysterectomy is needed only in extreme cases, when dilatation is specially laborious, or there is some reason why the preservation of the uterus will be dangerous. In the absence of infection Cesarean section is to be preferred when there is danger of serious tearing of the uterus. If infection is only presumptive, rapid dilatation may be preferred to a suprasymphyseal section. The welfare of the child should be considered of the first importance.

**Structure and Evolution of Uterine Muscle.**—Ed. Retterer and Aug. Lelievre (*L'Obstét.*, Oct., 1909) have made a study of sections obtained from the uterus of the guinea-pig and of the woman at various periods of pregnancy, with reference to the structure of the uterine muscle. They state that the empty uterus consists of two layers of muscle; an external of longitudinal, and an internal of circular fibers. Between them are found interlacing fibers accompanying the large blood-vessels. These fiber cells consist of a nucleus and a cell body, the protoplasm of which is reticulated, the narrow spaces being filled by a small amount of hyaloplasm, which stains with carmine. At the beginning of gestation the muscle becomes thinned as the ovum develops. In the second half of gestation the uterine muscle increases in thickness, while extending considerably. The increase in thickness depends on the multiplication of the existing fibers, hypertrophy of the fiber cells, and the transfor-

mation of the cells of the chorion into fiber cells. The hypertrophy is accompanied by modifications in the cell structure. There is no connective tissue in the uterus aside from that accompanying the vessels. Clear reticular bands are elaborated from the fiber cells themselves.

**Renewal of the Prematurely Evacuated Amniotic Fluid.**—Schallehn (*Arch. f. Gyn.*, Bd. 89, H. 2, 1909) says that it is possible in cases in which there is danger to the fetus because of a premature evacuation of the amniotic fluid, to renew that fluid by the injection of physiological salt solution. This is introduced by means of a new dilating apparatus consisting of a rubber balloon provided with a soft-rubber tube through which the sterilized salt solution can be introduced. The danger to the child is due to pressure of the uterus directly on the circulation after the emptying of the amniotic fluid, which is shown by weakened heart action. This balloon was originated by Bauer. The amount of solution to be introduced is from 500 to 750 c.c. The indication is weakened heart action and irregularity of the beat when immediate delivery is impossible. Another indication is the condition of muscular atony in the uterus following twin pregnancy, hydramnios, or other severe stretching of the uterus.

The introduction of the fluid will bring about regularity and increased force of the contractions. Another danger to be feared that can be obviated by this injection is premature separation of the placenta. The injection equalizes the pressure and keeps the placental tissue in contact with the uterine walls. The author has collected accounts of the use of this method in six cases, in three of which it was used for irregularity of the fetal heart and in three to increase the amount of fluid on account of great mobility of the fetus.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Hemorrhagic Uteri.**—B. M. Anspach (*Surg. Gyn. Obst.*, September, 1909) has examined, with the aid of L. F. Isman, fifteen uteri removed for intractable uterine hemorrhage and has compared them with twenty-seven which were taken out for other reasons. He says that the arteriosclerosis to which "apoplexia uteri," "intractable hemorrhage," etc., have been attributed is nothing more than a normal sclerosis and obliteration of the vascular channels of the uterus occurring in due proportion to the parity and the age of the individual. The normal atrophy of the uterus which begins about the time of the menopause affects the muscle a little more than it does the connective tissue; but this plays no part in the production of hemorrhage. Hemorrhage purely the result of myometrial disease may be due to an absence of the normal increase of elastic and fibrous tissue, or in other words, to a lack of the physiologic sclerosis of the vascular system and fibrosis of the uterus during the later generative period, resulting in engorgement and congestion of the uterine vessels.

In a large proportion of so-called hemorrhagic uteri the symptoms are not dependent upon any histologic alteration in the myometrium, but arise from fungus endometritis, hypertrophied and cystic cervix, displacement of the uterus, inflammatory lesions of the adnexa or the cellular tissue of the pelvis, or congestion of the pelvic blood-vessels from general weakness, cardiac or renal disease.

**Inoperable Carcinoma of the Uterus.**—A. Martin (*Surg. Gyn. Obst.*, September, 1909) recommends only general treatment in inoperable cases which present no special symptoms but merely ulceration without bleeding on examination and only a small ulcer. In the great majority bleeding and sloughing demand removal of cancerous outgrowths and destruction of all the zone of infiltration around the ulcer. For this he favors the application of acetone. The treatment if pregnancy coexists is the same; but it is not wise to attempt to bring the head through the cancerous tissues, so Cesarean section is indicated.

**Total Epiploitis Complicating Salpingitis.**—Mauclaire (*Arch. Gén. de Chir.*, September 25, 1909) says that although epiploitis of a portion of the omentum may occur rather frequently, especially in hernial sacs, an involvement of the entire omentum is rare. He gives an account of a case in which this complication occurred in a salpingitis, the omentum being firmly adherent to the right tube, and forming a solid mass, thick and red. Removal left a suppurating wound which was a long time in healing. In some pelvic tumors, especially ordinary cysts and simple or vegetating ovarian cysts, sub-total epiploitis is not uncommon. Inflammation often involves the lower portion of the omentum in salpingitis, but it rarely reaches the upper portion. When it does occur the symptoms are pain, digestive troubles, anorexia, nausea, vomiting, general symptoms, fever, and facial appearance of peritonitis. Locally a hard, periumbilical tumor is felt, adherent to the abdominal wall, and tender. It may undergo a period of resolution and disappear under cold applied to the surface of the abdomen, or may require operation, as in the author's case.

**Psychical Etiology of Vaginismus.**—M. Walthard (*Munch. med. Woch.*, September 28, 1909) contends that vaginismus is not the result of a vaginal or vulvar hyperesthesia, but of a mental hyperesthesia and the treatment of the condition should be psychical. He finds that the muscular structures about the vulva and vagina are not the only ones that are contracted, but that the muscles of the thighs and back take part in the contraction. It is a combination of adduction and inward rolling of the thighs, lordosis of the vertebræ, closure of the pelvic outlet, and dislocation of the entire body. It is the result of a phobia, a fear of pain to be inflicted in some way. It is no physiological reflex, but a psychical reflex. The treatment must include convincing the patient that her genital organs are entirely normal and the fear of pain unfounded. It is found that in any act

of contraction the antagonistic muscles are relaxed. The antagonists of the muscles used are those of the abdominal walls. Hence the contraction of these muscles and those that press down on the abdominal contents as in straining at stool will tend to relax the muscles contracted in vaginismus. Instruction how to make these antagonistic motions must be given the patient after securing her confidence, and convincing her that fear is needless.

**Utero-adnexal Sclerosis Outside of the Menopause.**—Roux de Brignolles (*La Gyn.*, Sept., 1909) finds that sclerosis of the uterus and adnexa, especially the ovaries, is quite frequent in young girls and women, as well as during the menopause. Occurring in these young women, it is due to repeated attacks of pelvic congestion, and progressive circulatory troubles, occurring during the period of sexual life and disabling the patient because of constant suffering. If in any way there is produced an extra-physiological congestion, active or passive, the genital apparatus reacts and suffers, and later a chronic congestion is established. The number of cases of ovarian sclerosis is estimated at 16 per cent. of all gynecological troubles. The sclerocystic ovary is diseased in varying degrees and the amount of suffering varies. It produces profound alterations of the nervous and general system and complications involving the digestive system. This condition exists even in the young girl. Pain is a most important symptom, varying greatly in degree, occurring at first at the menstrual period, and later ten days before the period, in some cases lasting the greater part of the month. The intermenstrual pain comes on suddenly, and intensely. The menstrual pain is accompanied with nausea and vomiting. Prolapsus of the ovaries occurs, either to the side or into the posterior culdesac. Intercostal and spinal neuralgia accompanies the other symptoms, and pain on defecation and urination during the periods of congestion. Changes in menstruation include dysmenorrhea, with very intractable hemorrhages following the menstrual period and continuing almost through the month, metrorrhagia, and amenorrhea. Leucorrhea, the sign of persistent congestion, also occurs. The physical signs are unimportant. Bimanual and rectal palpation give valuable information, showing intense tenderness of the diseased and prolapsed ovaries. The ovary may be very small in pure sclerosis, or several times its natural size in the cystic form. The uterus is larger than normal, and indurated, often retroflexed, and generally mobile. The digestive symptoms include constipation, membranous diarrhea, and all kinds of indigestion. There is severe pain in the lumbar region on exertion. Nervous symptoms are of all sorts, including excitement and neurasthenic symptoms. The thin type of patient is irritable, bad tempered, and changed in character and intelligence; the fat type is stupid and prone to lie listless in fear of increasing her sufferings. The author believes that although there are cases of sclerosis due to

gonorrheal or other infection, most cases are not due to this factor. Constipation, diseases of the heart and lungs, displacements of the uterus and adnexa, and tumors are etiological factors. The author gives a careful exposition of the points of differential diagnosis between this affection of the genitals and others.

**Appendicitis and Diseases of the Adnexa.**—Paul Segond (*Gaz. Méd. de Paris*, Oct. 1, 1909) says that the coexistence of appendicitis with involvement of the adnexa is extremely frequent. There seems to be a relation of cause and effect between the two. In suppurative lesions both organs may be involved in an inflammatory mass; the appendicular cavity and salpinx may communicate, but in general one set of organs is involved only on the surface; an oophoro-salpingitis is accompanied by a peri-appendicitis, or *vice versa*. This association is more frequent in chronic lesions. Both may complicate a normal pregnancy or an extrauterine pregnancy. Appendiculo-anexitis is met with often with cysts and pelvic tumors. The primary reason of their coexistence is the location of the organs so near one another. Another factor is the existence of a line of connecting lymphatics, and an appendiculo-ovarian ligament. The subperitoneal cellular tissue connects them as does the peritoneum, and the inflammation passes in this way. False membranes formed around the inflamed adnexa capture the appendix and hold it down, causing peri-appendicitis. Changes in its nutrition take place, and the phagocytic functions of defense are lost. Finally a true appendicitis develops. In acute cases the diagnosis between the two sets of lesions is very difficult. A right oophoro-salpingitis with normal adnexa of the left side favors appendicitis. In young girls who have neither tuberculosis nor gonorrhea, location of symptoms in the right side favors appendicitis as the cause of salpingitis. The indications for operation in suppurative cases are imperative. When there is appendicitis, vaginal operation is contraindicated; in the course of all laparotomies the appendix should be carefully examined. The appendix should always be removed when found inflamed, and perhaps should always be removed even when normal. The median incision should generally be preferred to a lateral one.

**Fibromata of the Vagina.**—Pierre Jacobée (*Jour. de Méd. de Paris*, Oct. 9, 1909) finds that fibromata of the vagina are rare. They may be diffuse or pedunculated, and they arise at the expense of the connective tissue or muscular fibers of the vagina itself, or have an origin in the uterus and are really migratory fibroids. They are of the same structure as uterine fibroids; their favorite location is the anterior wall of the vagina, although they may occur at any point of the walls. They produce no symptoms at all except those of compression, and such as arise from the escape from the vagina of a pedunculated tumor. Pain is extremely rare and results from compression of the

sacral plexus. The ureter may be compressed and cause difficult urination, tenesmus, and irritation of the neck of the bladder, with slight hematuria. If the fibroma is posterior to the uterus, a large sessile tumor may cause rectal symptoms from compression. With a pediculated tumor which escapes from the vaginal orifice we have compression of the supplying blood-vessels, dragging, severe lumbar pains, ulceration, infection, suppuration, or gangrene. Hemorrhage may be marked. Complicating pregnancy, they may or may not occasion symptoms of importance. The tumor may be so softened as to be easily compressed in labor, or it may become gangrenous. If the fibroma is sessile it should be enucleated and the cavity tamponed or closed by suture. If pedunculated it may be extirpated by section of the pedicle with cauterization of the stump.

**Time for Operation upon Chronic Inflammatory Pelvic Mass.**—H. S. Crossen (*Surg. Gyn. Obst.*, Oct., 1909) says that abdominal operation for a chronic inflammatory mass in the pelvis should not be undertaken before the period of probable sterilization, except in those rare cases in which, in spite of palliative measures, the patient's life is threatened by the severity of the inflammation and the infected focus cannot be satisfactorily drained extra-peritoneally. In the gonococcal cases, the bacteria are dead or attenuated to practical sterility within three or four months from the beginning of the trouble. Abdominal section for a mass of streptococcus origin is never safe. Such an operation at any time, even years after the infection, is liable to be followed by fatal peritonitis. No intraperitoneal operation should be undertaken until the streptococcus is excluded with reasonable certainty. In a doubtful case in which the abdomen is opened on the supposition that the mass is tuboovarian and it is found, before adhesions are much disturbed, that the mass is principally in the connective tissue (parametric), the route of attack should be changed to extraperitoneal (per vaginam or above Poupart's ligament) and the abdominal wound closed. Such a lesion probably contains streptococci and the adhesions of omentum and bowel, which caused the deceptive mass high in the tubal region, constitute nature's barrier between the virulent bacteria and the peritoneal cavity. When this barrier is broken down, the way is opened for a fatal peritonitis.

# DEPARTMENT OF PEDIATRICS.

## TRANSACTIONS OF THE CHICAGO PEDIATRIC SOCIETY.

*Meeting of October 19, 1909.*

*The President, I. E. ABT, M. D., in the Chair.*

DR. JOBLING gave some very much appreciated information of later scientific discoveries which could be applied to clinical pediatrics. Among other things he suggested small doses of atropine be given previous to antitoxin infection in any child who showed asthmatic tendencies.

MR. JOHN A. HORNSBY, suprintendent of the Michael Reese Hospital, read a paper on

### THE CHILDREN'S DEPARTMENT OF A MODERN HOSPITAL FROM THE ADMINISTRATION STANDPOINT.

I HAVE thought it might be apropos to discuss before a society like this some points in the administrative technic of a children's department—not the technic that you pediatricians mean when you use that word, but the purely administrative measures of an exacting character that stand for the difference between a well-ordered children's department and one that is administered in a slovenly manner, where infections occur frequently, and where all the vast progeny of filth grow.

The exanthemata, of course, form the great bugaboo in the administration of every children's hospital. Even you pediatricians are not quite sure whether a particular form of isolation is adequate in any particular form of exanthematous infection, or in erysipelas, or in that peculiar form of gonorrheal vaginitis that we are finding so frequently in small children; therefore, how much harder must it be for a hospital administrator to determine the effectiveness of this or that degree of isolation! And we must understand always that isolation means expense, and the greater the degree of isolation, the greater the cost will be; and while the members of the profession would decry the hospital administrator's apparently cold, practical balancing of money against

human life, still we must all understand that there are financial limitations in every hospital, as well as there are physical limitations, and, broadly speaking, if we are to make sure, beyond peradventure, that an isolation is efficient and perfect, we must fall back upon an acknowledged state or condition that we hospital people are recognizing more and more every day as extremely imminent, and that is this: that there are too many hospitals of an inferior and inefficient character, and that the money going to the support of these weaker institutions might be very much better expended if it were concentrated in a few, effective, up-to-date institutions capable of meeting the requirements, and living up to the knowledge that you experts of the medical profession and the scientists in your various special branches have given us to work by.

The day is very fast coming when philanthropists and public-spirited people of wealth generally will very nearly ignore the question of the per capita cost of patients in an institution that they may be investigating for purposes of support, and they will want to know rather how modern the institution is; what it is doing in the quality of service that its patients receive; and that institution is going to fare best at the hands of such broad-minded givers that can make the best showing not in the smallness of its expenditures, but in the largeness of its results.

I visited an institution not long since, and I may say one of the most celebrated hospitals in this country, under the guidance of one of the most celebrated of your fellow pediatricians, and in a certain ward in the children's department this celebrated physician pointed out to me a little row of small beds in one corner of the ward with a white tape strung round the beds, giving them a moral rather than a physical separation from the beds of the other children in the ward. The doctor explained to me that these were cases of gonorrheal vaginitis. The patients were babies, most of them, and I was told that they were isolated. Each bed contained its own thermometer in a little case fastened to one of the bed posts; at the side of each bed was a small stand containing two drawers, and these drawers contained such little dressings as vulval pads, small pieces of sterilized gauze, powders, safety-pins, diapers, a brush and comb, and on the table were arranged the dishes for the child, knife, fork, and spoon, metal cup and stone-china dishes. I thought the arrangement was ideal. I did not see a nurse attending these children in the ten or fifteen minutes that I stood in the immediate neighborhood,

and I asked the doctor how he arranged the nursing. He pointed to a nurse in a remote part of the ward, and said that this particular nurse took care of all the children in the ward, including the isolated cases, but that she washed her hands, and donned a gown each time when she went within the tape-line boundaries of the infected area. I questioned the efficiency of this particular part of the isolation, but the doctor assured me it had proven efficient over a long period of time. I left the ward with some conflicting opinions in my mind, and we visited other parts of the house. On our way back we happened to pass by this particular ward, and as I had been very much interested in this class of cases and the means for their care, I glanced into the room again, and I saw the same nurse who had been in the ward before, but this time she was inside the tape-line boundary giving a drink of water to one of the gonorrheal babies. She did not have on the gown the doctor had enlarged upon, but I refrained from mentioning the fact to the doctor, and perhaps he believes to this day that his isolation is effective and that his nurses are infallible, and perhaps he may be right. I doubt very much, however, whether the rest of us are so fortunately situated in the way of nursing efficiency. All this happened in an institution that is quoted to me almost daily as one of the best and most up-to-date in this or any other country, and I am quite prepared to admit that it is one of the best, but to my mind the incident I have just recited proves conclusively that there is no form of isolation in a children's department that is efficient and effective, where the human possibility to err is left open, and I have come to the conclusion that whether the case is one of the recognized and well-understood exanthemata or something else of a very much less contagious or infectious nature, the only form of isolation is absolute separation by good hard physical walls, with a nurse locked in with her charges. If I had not come to such a conclusion, my life as the administration officer of a children's hospital would be made very miserable because of the insistent position along this line taken by the attending men in the institution.

Let us admit now for a moment that we have not taken such proper methods to prevent the spread of an infection, and that something has broken out in the institution in a ward. What shall we do? In this institution we have tried all the possible means at hand, from pure palliative to the most radical, from removal of the patient and his isolation elsewhere, clear along

the gamut of prophylaxis, including the entire breaking up of the ward, the removal of every patient after a thorough bathing and change of clothing, and the fumigation of all that part of the house. We have found here that nothing short of the most elaborate and radical of preventive measures will suffice, and the institution that boasts of its ability to stop an epidemic short of such radical measures, is, I think, lucky rather than wise.

Every institution of any consequence or in which any considerable number of patients are treated must develop the nucleus of an epidemic about so often. This institution is no exception, and I may be pardoned for making a confession in one such case that we had recently on the principle that all is well that ends well. We woke one morning to find two of our nurses in the children's department with sore throats and fever, in which the laboratory findings were pure cultures of diphtheria. It transpired that these nurses had not been very well for some days, and yet they had been on duty in the children's ward. If there ever was a fair field for an epidemic of diphtheria, this condition of affairs seemed to offer it. These nurses were instantly isolated in a separate building which we have for that purpose, with a nurse confined with them and with a physician who at no time entered any other part of the hospital, and every technical precaution was taken to make the isolation of these nurses efficient.

In due course of time we found pure cultures in a child's throat, and in a day or two another case developed, and so on until twelve or fifteen of the children in the hospital had pure diphtheria cultures in their throats. Some of them went so far that there were physical signs of diphtheritic intoxication. Our method of procedure was radical. Every child was given the antitoxin, and as soon as it developed the cultures it was removed to the isolation building where the nurses had been previously taken. When a case developed the ward was cleaned out completely. Every child was bathed and changed and moved into another ward by nurses under the most rigidly clean methods. All of the clothing and linens were thoroughly disinfected before removal to the laundry, and the quarters were invariably fumigated to the maximum degree. The epidemic strung along for nearly a month, but in no case was there an appreciable illness on the part of the patient, aside from the light rise of temperature due to the antitoxin; and looking back upon the epidemic now, we rather like to identify it under

the name of a laboratory epidemic of diphtheria. It was an expensive epidemic, however, as every epidemic must be that is properly handled.

We have had some experience in this institution with the handling of infant foods, especially milk, and the various formulas containing milk, and it has been astonishing to us, even to the attending men in the children's department, what grave results could come from the minutest errors in the technic of milk formulation. We pay a very high price for the milk for our children's department, and obtain it from select cows, raw, and within twelve hours from the time of drawing.

We use our own design of pasteurizer, in which all the milk is pasteurized under laboratory conditions; that is, by complete immersion in water, and the temperature of the water is automatically controlled by approved and proven temperature controlling devices. We try to be mathematical in our exactness as to the bulk of milk pasteurized in every given laboratory flask, and we have settled down now to the pasteurization of milk under the particular laboratory form in use in the laboratory of the Agricultural Department at Washington, under Dr. Rosenau, which provides for 60° centigrade for twenty minutes after the milk has arrived at the exact temperature of the water in the pasteurizer. In Dr. Rosenau's experiments this temperature at this time destroys all pathogenic bacteria, and we have found that it destroys not only the pathogenic bacteria, but the so-called lactic acid bacteria as well. And we have found, moreover, that it does this without fixing the caseins of the milk and without coagulating the lactalbumen.

I have elaborated somewhat on this method merely to show that we have a definite and exact system of operation, but here again comes in the element of human liability to err, and under even the greatest possible precautions we have on one or two occasions slipped in our technic, either in pasteurization or in some step in the formulation of the various milk compounds or in their predigestion by the use of some one of the rennet ferments, and these slips have been drawn to our attention most forcibly at the bedside of some little patient to whom the milk had been given.

We are finding that it is not sufficient that we procure the best possible form of fresh cows' milk brought to us under the most favorable conditions, but that the preparation of the milk for use in the children's department has then but just

begun, and that its pasteurization or sterilization and its admixture with one or other of the ingredients that you gentlemen of the Pediatric Society prescribe for your sick children is no less important a step than the state of the milk itself; and that an error ever so slight, either under-pasteurization of this milk or in the over-sterilization of it to the point of solidifying the caseins and coagulating the lactalbumen can develop gastrointestinal disorders of quite as grave a character as those that we find coming from the slums under slum conditions.

During the past few months, groping as we have been for an effective reply to the demand for some uniform feeding for sick children suffering from gastrointestinal disorders or malnutrition, Dr. Abt, of our pediatric staff, has undertaken a careful study of the milk of goats. The hospital now has its own herd of goats. The individuals of that herd are identified practically and in the laboratory. Our records develop the amount of butter fat, the milk that each contains, the fineness of the fat globule itself, the bacterial count under those peculiar conditions which we have in this institution. The milk is drawn under those ideal conditions prescribed by the technists among dairy-men; the udder of the goat is washed in sterile water; all the vessels are sterilized; the hands of the operator are surgically clean, and the milk reaches the refrigerator in as nearly perfect a condition as a conscientious respect for these various methods will permit.

The records of the institution, as Dr. Abt will some day advise you, demonstrate results that would seem almost out of proportion to the slight change from cows' milk to goats' milk in the feeding of children; and so well satisfied is the institution with the results thus far given that we have already imported, and are to import, other famous breeds of goats to develop the milking capacity, quality as well as quantity.

If the members of the society are particularly interested in this subject, I should be glad to exhibit before you one of the members of this imported herd.

DR. LACKNER showed a case of

#### PLASTIC TUBERCULAR PERITONITIS.

In a child two years old in which Schlossman's method of treatment with tuberculin had been used with apparent success.

DR. MARK JAMPOLIS read the report of a case of

DIABETES MELLITUS IN A BOY TWELVE YEARS OLD.

The following case is reported chiefly for its etiologic and dietetic interest.

The patient, D. R., aged eleven years, of Russian Jewish parentage, was admitted to the surgical department of the Michael Reese Hospital, July 2, 1907, with the following history: While walking in the street, the patient was struck from behind by an automobile. He fell unconscious and remained so for about thirty minutes.

On reaching the hospital he had regained consciousness, his mind was clear and no evidences of head injury were found, but there was a compound fracture of the right tibia. Under ether anesthesia, the wound was cleansed and the fracture set by Dr. L. A. Greensfelder. The recovery was uneventful, and after five weeks the boy was discharged in good condition. The urine was normal on the day following the injury.

About eighteen months later, January 19, 1909, he was again admitted to the Michael Reese Hospital, this time to the medical service of Dr. Abt, with the following history: Last February (eleven months ago and seven months after the injury) the boy began to be troubled with marked diuresis. Nine months ago he was urinating about twelve times a day, three-quarters of a quart at a time; six months ago, eight times and a quart at a time. His appetite became enormous and his thirst increased until he has required about fourteen cups of water daily for the past four months. He has grown progressively weaker and his eyesight is becoming poorer. Aside from a dryness in the throat and an occasional headache of late, he has been feeling well. He had measles seven years ago, but has otherwise enjoyed good health. The family history is negative, showing no constitutional diseases or neuroses.

*Examination.*—On physical examination nothing abnormal was found except diminished patellar reflexes. The blood picture and blood pressure were normal, and nothing abnormal was found by Dr. Snydacker in the eye-grounds. One hundred and six ounces of urine were voided in twenty-four hours, showing 5.4 per cent. of sugar and the presence of acetone, but no diacetic acid.

*Treatment and Reaction.*—He was given an ordinary diabetic diet until April 21, a period of about three months, the following being an average daily diet.

8 A. M.—Orange, egg, bacon and coffee with cream.

10 A. M.—Broth, 6 oz.

Noon.—Gluten bread, salad, steak, tea, dessert.

3 P. M.—Orange.

5 P. M.—Steak, chicken or chop, gluten bread, tea with cream, custard.

In addition, thymus gland, both dry and glycerine extract,

was administered for about five weeks and Fowler's solution for about three weeks, without any noticeable effect. During this period the urine averaged 35 to 40 oz. in twenty-four hours and constantly contained from 1.4 to 6.5 per cent. of sugar, and usually acetone, but no diacetic acid. His weight in the last month averaged about seventy-two pounds. His appetite improved and his weakness became less pronounced.

He was then given green vegetables alone for two days, but the sugar remained high and the weight dropped to seventy-one pounds. The general diabetic diet was resumed for six days, but the boy lost two more pounds and the sugar averaged 4 per cent.

On May 5, in spite of the loss in weight, the diet was limited to the Von Noorden gruel, prepared according to the following formula:

Oatmeal,	250 gm.
Butter,	250 gm.
White of six eggs,	
Salt to flavor.	

To be consumed in twenty-four hours.

The sugar promptly disappeared and remained absent, but acetone was constantly present. After four days, green vegetables were added to the diet and sugar remained absent, but the weight fell to sixty-six and one-half pounds. After a week of the gruel, the general diet was again resumed and the sugar promptly rose to 61 per cent., and with it the body-weight increase to seventy-two pounds.

After ten days of the liberal diet, Von Noorden's gruel was again given for about a month, a period from May 16 to June 13, from 200 to 400 grams of green vegetables being added after the first week. Sugar was absent during this period, but acetone in various amounts was usually found. The weight fell at first and then remained fairly constant, averaging 66 to 68 pounds. The boy felt well, although acetone was constantly present, his hunger was satisfied and he found the gruel not distasteful. Casts were found in the urine at times during this period and the total amount of urine varied from 16 to 40 oz.

Beginning June 13, meats and oranges were gradually added and the weight rose from 66 to 70 1/2 pounds. Sugar remained absent from May 16 until June 25, and from that time until July 9 varied from zero to 5 per cent. An average diet (June 20) was as follows:

8 A. M.—Gruel, 155 gm.; coffee, 125 gm.; 1/2 orange.

Noon.—Vegetables, 275 gm.; gruel, 190 gm.; beans, 90; chicken, 140 gm.

3 P. M.—Gruel, 160 gm.

5 P. M.—Beans, 100 gm.; gruel, 175 gm.; vegetables, 190 gm.

Ten days later, July 1, the diet was as follows:

8 A. M.—Bacon, 70 gm.; gruel, 210 gm.; coffee, 210 gm.; 1/2 orange.

Noon.—Green vegetables, 245 gm.; scraped beef, 60 gm.; chicken, 100 gm.; gruel, 140 gm.

3 P. M.—Gruel, 240 gm.

5 P. M.—Vegetables, 280 gm.; beef, 90 gm.; gruel, 234 gm.

On July 8 a piece of toast was added and the sugar rose to almost 3 per cent. On July 12 the toast was stopped and the sugar fell to 0.6 per cent. July 15 he left the hospital feeling well, voiding about a quart of urine daily containing less than 2 per cent. of sugar, some acetone, but no albumin or casts.

Since leaving the hospital he has been on general diabetic diet, with gluten bread (no bread, potatoes or sugar). His weight has increased gradually from 70 pounds to 79 pounds at present (Oct. 15). A urinalysis once or twice weekly showed the presence of less than 2 per cent. of sugar, the percentage averaging less than 0.5 per cent. for the past month. His general health has been good and he feels no pain or discomfort in spite of an almost constant acetonuria.

The exact rôle played by the traumatism was the subject of much controversy in the lawsuit which was started after the accident but before the diabetes became manifest, and came to trial when the disease was flourishing.

That trauma to the head and spinal column produces glycosuria, both transitory and permanent, has been recognized by clinicians and physiologists for many years. Griesinger\* was the first to note that severe trauma to other parts of the body, as the muscles and abdomen, may be followed by diabetes.

In the review of 212 cases of head injuries admitted to the Boston City Hospital, Higgins and Ogden† found glycosuria in twenty cases, five being simple scalp wounds, four deeper wounds denuding the bone, five fractures of the vault and five fractures of the base.

According to Naunyn,‡ although the traumatic glycosurias are the most favorable as a rule, nevertheless some of the most severe cases of diabetes are of traumatic origin. He questions the right of anyone to deny that the frequent "transitory glycosurias" are manifestations of a true "diabetes." Finding a hereditary influence in a large number of cases in all types of the disease, he recognizes only two forms of the disease, the mild and the severe, the pathogenesis in all cases being a hyperglycemia. He denies the manifold character of the disease, namely that etiologic differences correspond with differences in the symptomatology and course, and that we should speak of the "various forms" of the disease rather than the disease "diabetes mellitus."

Ebstein§ also believes that in all cases of traumatic diabetes, "individual predisposition" is an important factor. He collected from his own clinic and the literature fifty cases of traumatic

\* Griesinger. Cited from Kleen (Diabetes and Glycosuria).

† Higgins and Ogden. *Bost. Med. and Surg. Jour.*, Feb. 28, 1895.

‡ Naunyn. *Mod. Clin. Med.*, Chap. Diabetes.

§ Ebstein. Cited from Osler's *Med. Series*, Chap. by Futtcher.

diabetes, half of which were due to head injuries and half to trauma elsewhere.

Bernstein-Kohan\* found head traumatism the most frequent, the glycosuria appearing at times long after the injury, these cases being the most obstinate.

Wegli, † in 108 cases of diabetes collected from the literature, found trauma the exciting cause in eleven cases. The list comprises head injuries for the most part, but in two cases there was abdominal trauma, in one a back injury and in one an injury to the hands. Of his own twenty-eight cases, he attributes to trauma the undoubted exciting rôle in four—three head injuries and one injury to a finger with much hemorrhage. In four other cases he is doubtful on account of complicating circumstances and the long period elapsing between the injury and the first manifestation of the disease.

In the case reported above, admitting trauma as the exciting cause, we cannot determine whether the slight concussion or the more extensive fractures, or both, played the important part. Other factors must not be overlooked. Thus, in view of the universally recognized prevalence of the disease among Jews, the racial predisposition is present, even though some direct family influence may have been overlooked by the parents.

The accompanying chart shows the reaction to the various diets.

DR. A. A. STRAUSS reported a case of

#### AMAUROTIC FAMILY IDIOCY.

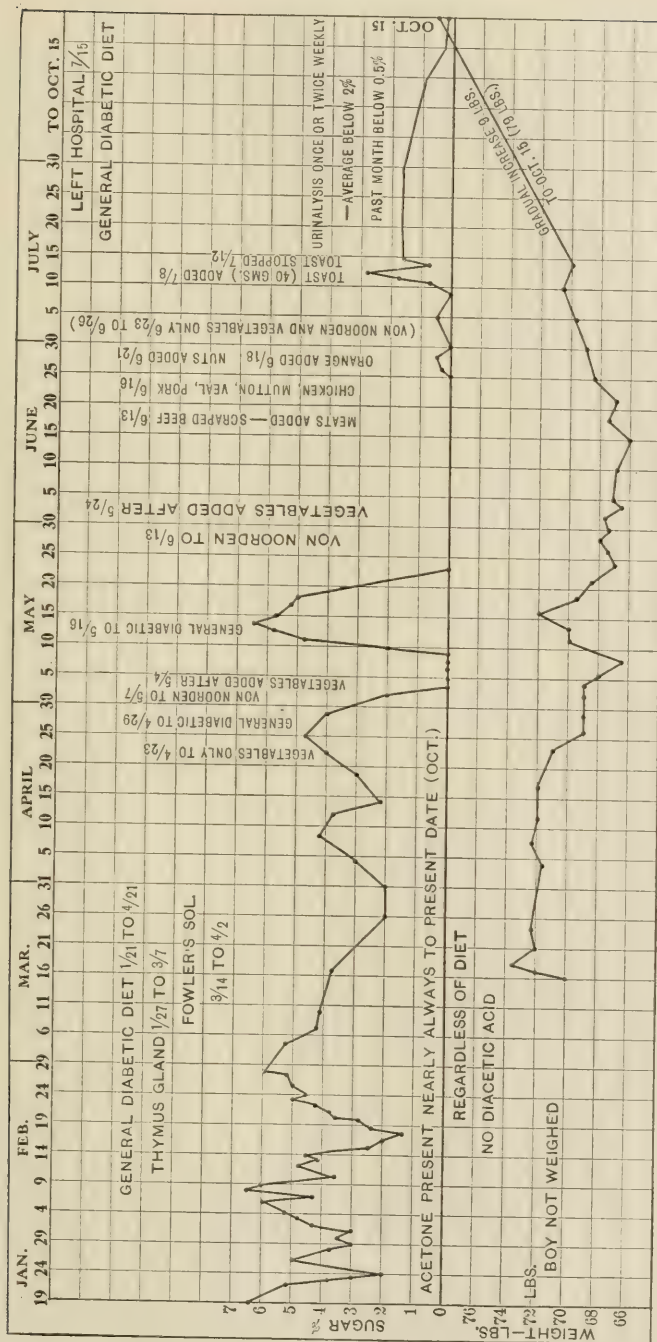
After a careful history of the case Dr. Strauss summed up the important points as follows:

1. That it is a family disease, this being the second child dying with this disease.
2. Insidious onset, inability to support the head, gradual development of muscular weakness going on to spastic and flaccid paralysis.
3. Gradual development of blindness.
4. Pathognomonic sign in the macula lutea (cherry spot).
5. Constant nystagmus and irregular nystagmus.
6. Alternating absence and presence of reflexes.
7. Hyperacousis or increased motor reaction, throwing child into convulsions.
8. Impaired deglutition and choking spells.
9. Digestion normal.
10. Constant druling of saliva.
11. Last stage of the disease, marked loss in fat and weight and marked asthenia.

Practically every symptom that has ever been noted in all the cases are found in this one case with the exception of the explosive laughter which was not present in this disease. Nearly

\* Bernstein-Kohan. Thèse de Paris, 1891.

† Wegli. *Arch. f. Kinderheil.*, B. xix (with references to cases in literature).



JAMFOLIS.—Chart showing course of diabetes in a boy twelve years old.

all the cases reported are found in Hebrews. This child is of Jewish birth, and highly neurotic parents.

The most important pathological changes to be found in these cases are marked degeneration of the ganglion cells of the entire central nervous system, extending to the ganglia of the retina (cherry spot) and degenerative changes in the pyramidal tracts.

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*Meeting of November 16, 1909.*

*The President, I. A. ABT., M. D., in the Chair.*

SYMPOSIUM ON CONGENITAL SYPHILIS.

DR. W. J. BUTLER spoke of the "Value of the Wasserman Reaction in Congenital Syphilis."

DR. HENRY G. ANTHONY discussed the

SKIN MANIFESTATIONS OF CONGENITAL SYPHILIS.

The points of difference between congenital and adult manifestations of syphilis are, first, the infiltration is apt to be diffuse; second, apt to be located on the face, buttocks, and genital region; third, the epidermis is apt to separate more readily from the derma; and, fourth, bullous eruptions are more apt to form. However, all bullous eruptions in these locations are not syphilitic. The most common form is bullous erythema. The bullæ are present at birth, with no erythema of the base, and not surrounded by redness. In twenty-four or forty-eight hours the bullæ rupture, and the base becomes reddened and infiltrated. In some cases the bullæ disappear and the case goes on to healing. In other cases the bullæ assume a malignant form and appear all over the body. The bullæ appear in the throat and the child has a hoarse cry. Difficulties of feeding begin; the child loses weight, emaciates rapidly, and dies on the tenth or twelfth day. No microorganisms are present in the fluid of such bullæ. The disease is probably closely related to erythema multiforme.

The next bullous eruption is epidermolysis bullosa hereditaria, usually following a slight traumatism. The disease is not present at birth, as a rule, but occurs in succeeding generations.

Next eruption is bullous impetigo, which is the same as impetigo contagiosa of the adult, from which it differs in the fact that it assumes the bullous form when it occurs in infants. The eruption always occurs in warm weather, and there are usually adult cases of impetigo in other members of the family. In the beginning it does not resemble a syphilitic eruption, but after a time, along the outline of the bulla, where the epidermis lies in shreds, an inflammatory exudate is thrown out forming circles and segments of a circle which strongly resemble eruptions of a syphilitic nature.

Another form of bullous eruption is that in which a flat papule will spring up on the base of a bullous impetigo. It is almost indistinguishable from a syphilitic eruption.

## DIAGNOSIS OF SYPHILIS.

DR. R. A. KROST after calling attention to the importance of the Wasserman reaction and the finding of the spirochete took up the clinical manifestations in the active stage and in the stages of remission and of freedom from symptoms. He first mentioned the pathological findings in the organs of the fetus together with the occasional occurrence of the pemphigoid eruption before birth. In the first three months of life the presence of a firm enlarged spleen is almost diagnostic. The snuffles, rhagades, diffuse infiltration of the skin, the infiltrated and glossy appearance of the palms and soles, excoriations about the anus, and the various circumscribed skin eruption should receive our earnest attention. In the bones we find the epiphyseal swellings, pseudoparalysis, the "natiform caput" of Parrot and hydrocephalus. The enlargement of the cubital and posterior auricular glands is of much diagnostic value provided there are no local lesions.

During the interval of remission the yellowish tint to the skin, the splenic enlargement, the cubital gland hypertrophy, the sparsely covered scalp with the hydrocephalic head, saddle-nose and rhagades are important signs. During early childhood a chorioretinitis or bilateral painful enlargement of the testicle, condylomata lata, anemia, which at times cannot be differentiated from a leukemia, may appear.

In late syphilis we have the iritis, keratitis, optic neuritis, deafness and osteitis and periosteitis (saber sheath tibia); also gummata of the various organs, sclerosis of the arteries with resultant aneurysm and Hutchinson's triad, infantilism and various skeletal changes may be attributed to syphilis.

## PATHOLOGY OF SYPHILIS.

DR. JOSEPH BRENNEMANN said the lesions of congenital syphilis vary characteristically as they occur in the fetus, the infant, or the older child.

*In fetal syphilis* the essential change is a perivascular cell infiltration that effects especially the rapidly vascular organs, the liver, spleen, lungs, etc., and the epiphyseal ends of the long bones. The liver and spleen are enlarged (1 1/2 normal), and in the epiphyseal regions of the long bones there is "abnormal proliferation of the cartilage cells, disturbances in the metaplasia of the cartilaginous ground substance, necrotic processes within the cartilage with cleft formation and pathological calcification" (the so-called Wegner's osteochondritis.) Fatty degeneration, necrosis and softening of this grayish, broad, serrated, mortar-like band may lead to epiphyseal separation.

*In infantile syphilis* fetal conditions may persist. Other early lesions are pemphigus and coryza. The essential change in the nose is a diffuse hyperplastic inflammatory thickening of the nasal mucous membrane. If inflammation, ulceration, and

contraction of the bony and cartilaginous septum occur in the fetus or after birth, characteristic deformities result. The skin lesions are circumscribed and diffuse. The former includes syphilitic pemphigus, large blebs that occur only in the congenital disease, always at or very near birth, and always first in the soles and palms but also in other parts of the body; and also practically all the same lesions, papular, vesicular, pustular, etc., that occur in the acquired type of the disease in the second stage. The diffuse skin lesion is found only in congenital syphilis. It is a diffuse cell infiltration of the papillary layer of the skin, and leads to a hard and leathery consistency. It affects especially the face, the lips, cheeks, chin, eye-lids, the scalp and eyebrows; the palms and soles, and other parts of the body. About the mouth, eyes, nose, rectum, etc., where there is considerable motion fissures occur in this indurated skin that are very typical, and about the mouth frequently leave white linear radiating scars that are pathognomonic. The soles and palms are glossy, reddish, hardened, and desquamate in large masses. Paronychias are not infrequent.

Bone lesions are important here. Wegner's osteochondritis may persist. Syphilitic dactylitis occurs specially if the proximal phalanx of the index finger, and swelling and pseudoparalysis of the larger joints, especially the elbow due to diffuse dense inflammatory infiltration of the periosteum and adjacent soft parts, muscles, tendons, etc. The liver and spleen are palpably enlarged in about 25 and 75 per cent. of cases, respectively. Serous internal and external meningitis not infrequently occurs with manifestations of hydrocephalus. Slight generalized lymphadenitis often occurs, but not so regularly as in the acquired disease.

Recurrence of symptoms is not infrequent during the first two years. Condylomata and mucous patches then assume the greatest importance till about the fourth year. Adenitis is apt to be more marked.

*Late Hereditary Syphilis.*—The essential lesion here is the gumma as in tertiary acquired syphilis. Interstitial keratitis, chorioretinitis, optic neuritis, auditory neuritis with sudden deafness, are not infrequent. Diffuse hyperplastic inflammatory or gummatous changes in the long bones, especially the tibia, leading these to characteristic saber-shaped deformities, are next in frequency; Hutchinson's teeth occur but are not pathognomonic. Gummata may arise anywhere and produce a great variety of changes.

DR. JULIA D. MERRILL described late hereditary syphilis as occurring "in these cases whose first manifestations of the disease appear after the second year of life and in the tertiary form." After a careful review of the literature and of the controversy concerning the possibility of a long period of latency Dr. Merrill thinks that we may safely conclude that such does in reality exist and is comparatively common. Girls are affected in about 60 per cent. of the cases. Among the symptoms may be infantilism,

Hutchinson's triad and the bone lesions. As to the teeth, beside the well-known Hutchinson's teeth, Fournier describes a horizontal white streak across the incisors. The saber tibia, saddle-nose, and enlarged epitrochlear glands are suggestive.

The mortality is low but various permanent defects may remain. In prophylaxis a thorough examination of the eye is often of much value.

DR. HENRY F. HELMHOLZ reported a case of

#### MULTIPLE GUMMATA OF THE HEART AND STOMACH.\*

THE preponderance of pathological changes in the internal organs is one of the features of congenital syphilis that distinguishes it from the acquired form; it is not remarkable however that visceral lesions should be so common when one takes into consideration that one is dealing with a generalized infection, usually present from the very beginning of life, which affects practically every part of a rapidly growing organism. Since the discovery of the spirochete pallida, the enormity of the infection has become evident not only that at the points of infinite anatomical changes huge numbers of spirochetes are present, but also diffusely through the otherwise normal organs. Schlimpert(1) was able to demonstrate organisms, by means of the Levaditi method and counterstaining with carbolfuchsin, in the stomach, mesentery, mesenteric glands, gall-bladder, peripheral nerves, thyroid, thymus, tonsil, tongue, throat, and mucous membrane of cheek. The presence of the spirochete practically everywhere in the body of a luetic child makes it seem very probable that the organism is present in all of its excretions, and ought to make us doubly careful in guarding those in charge of cases of congenital syphilis from infection.

In acquired syphilis gummata appear in the tertiary stage, the longer a case has lasted the greater the likelihood of gummata of the internal organs. In the congenital form quite the opposite holds true. The longer a child lives the greater the probabilities that there is no involvement of the internal organs. Another difference to which Hochsinger has called special attention is that in the congenital form diffuse infiltration of the organs is the commonest, in the acquired the gumma.

The infrequency of lesions of the stomach and heart, together with the interesting pathological localization of the lesions in explaining the intense edema, makes it seem profitable to report the following case.

\*From the clinic of Professor Finkelstein, Berlin, and the Memorial Institute of Infectious Diseases, Chicago.

Werner E. Age, seven weeks. Born August 30, 1908. Died October 20, 1908. Admitted to the Berlin Kinderasyl. October 10, 1909.

*Family History.*—Father and mother both supposedly healthy.

Brought to the hospital with mild gastrointestinal disturbance. Weight, 2,850 gm. Umbilicus is still moist, the skin of abdomen is dry and can be peeled off in thin lamellæ. Slight desquamation of arms and legs, very marked on palms of hands and soles of feet. Slight edema of feet. Coryza and syphilitic deformity of nose.

November 16, 1909.—Coryza worse. Soles of feet red, shiny, and desquamating. Both epitrochlear glands palpable. Spleen and liver both palpable and of increased firmness. Edema has extended up the legs to the knees. Maculo-papular rash has appeared over entire body.

November 20, 1909.—Died quite suddenly this morning with signs of broken compensation, cyanosis, and edema involving the entire lower extremity and lower portion of trunk.

*Autopsy.*—Ten hours after death. Anatomical diagnosis: Congenital syphilis. Multiple gummata of heart and stomach. Solitary gumma of liver. Paravertebral bronchopneumonia. Diffuse infiltration of lungs. Stenosis of duodenum. Body is of a poorly developed, atrophic child. Rigor mortis slight. The trunk, the extremities, palms of hands, and soles of feet are covered with a maculo-papular rash. There is marked edema of the lower extremities and of the trunk. The peritoneal, pleural and pericardial cavities all contain an excess of fluid. Thymus is not enlarged and shows no pathological changes.

*Heart* is markedly enlarged. The enlargement is due to larger and smaller tumor masses lying in its walls. The tumors vary in size from 1.0 x 0.5 to 0.2 x 0.1 cm. in section, and are distributed as follows: two in wall of left ventricle, one in right ventricle, one in interventricular septum, one in a papillary muscle of both ventricles, and one small one in the wall of the right auricle. The valves are entirely normal. The tumors are rather firm and elastic, of an opaque light yellow color, in part uniformly yellow, in part as yellowish streaks in the normal-looking muscle. Nowhere does any one of the tumors extend to and involve the endocardium.

*Lungs.*—The left lung is congested in the paravertebral area, the right shows infiltration along the same area. The lungs are otherwise crepitant throughout.

Spleen is enlarged, firm, and elastic. The Malpighian corpuscles are slightly enlarged.

*Liver.*—The liver is of reddish-brown color and rather firmer than normal. On the anterior surface of the left lobe there is a large grayish-yellow mass measuring about 0.7 by 1.0 cm. raised slightly above the surface and sharply marked off from the normal liver tissue. On section the tumor is seen to extend only 0.2 cm. down into the liver tissue, and presents about the

same appearance as on the surface. There is some increase of connective tissue about the large vessels.

*Kidneys* are very firm and of a grayish-yellow color. The capsule strips easily. On section the cortex is swollen and there is no evidence of gummata or connective tissue infiltration.

*Adrenals* normal.

*Mesenteric glands* are firm and swollen. Pancreas and aorta normal.

*Stomach.*—In about the middle of the greater curvature there are two small round, flat, firm infiltrations of grayish-yellow color, showing a small depression in their center, apparently small ulcerations. The tumors measure 0.6 cm. in diameter. On section the tumors are plainly seen as grayish-yellow plaques lying entirely in the submucosa.

*Duodenum* is tied down by fibrous adhesions to the gall-bladder and colon, and at a point  $1\frac{1}{2}$  cm. below the pylorus the fibrous tissue has produced a slight stricture which has led to a slight dilatation of the duodenum above it.

*Microscopical Examination.*—The spirochete pallida could not be stained because of lack of fresh material.

*Heart.*—Two blocks were examined, one from a large gumma in the left ventricle, and the other from a smaller one in the right. The streaks in the tumors, seen in the gross, show up very plainly because they take no eosin stain and are in sharp contrast to the red staining muscle cells. These light areas are made up of a loose reticular fibrous tissue network. There is a gradual transition from these degenerated areas to the normal muscle. In the same relation to the muscle there are more purplish staining streaks that consist of a mass of granular detritus in which cellular outlines are gone and the nuclei fragmented. These areas are undoubtedly a preliminary stage of the other light staining streaks. The most characteristic lesions, however, are the cellular infiltrations which form thick fibrous rings about the blood-vessels. These infiltrations consist practically entirely of fibroblasts, only very few lymphocytes being present. One large vessel that is cut longitudinally is surrounded by the same loose reticular tissue that formed the streaks in the muscle. The endothelium shows marked proliferative changes, most of the vessels are narrowed down and some of them are completely occluded by the process. In the thickened wall of the vessels there are scattered miliary gummata characterized by small necroses with nuclear fragmentation, and peculiar knob-like deformities of the nucleus. At a distance the vessels show no pathological change.

The larger gumma resembles to some extent the one just described except that the muscular degeneration is not so marked, and there is more small round-celled infiltration about the vessels.

*Lungs.*—The air-spaces comprise the smaller portion of the section because of the great increase in the thickness of the alveolar wall due to the infiltration of mononuclear epithelioid cells;

this same type of cell is also seen in the alveoli together with some few leukocytes and erythrocytes.

*Spleen.*—The pulp is normal. The Malpighian corpuscles are enlarged and swollen, their centers have undergone necrosis which in some instances extended almost to the edge of the follicle. The epithelioid cells show marked proliferation.

*Pancreas* shows nothing of note.

*Mesenteric Lymph-gland.*—The picture here resembles quite closely that in the Malpighian follicles of the spleen with its proliferation of the epithelioid cells, the central necroses, and the nuclear fragmentation.

*Kidney.*—Except for slight thickening of the smaller vessels the kidney shows nothing pathological.

*Liver.*—The gumma in the liver as already described in the gross is situated just beneath the capsule and shades off gradually into the deeper portions of the liver. The most marked changes are found just beneath the surface where all of the granular tissue has been replaced by a very loose connective tissue in which, as the periphery of the gumma is reached, single rows of from five to eight liver cells make their appearance, and become more numerous between the strands of connective tissue until they shade gradually into the normal liver tissue.

The small vessels in the central portion of the gumma are entirely occluded, and are seen as small concentrically arranged connective-tissue follicles. At the periphery of the gumma, the infiltrations center about the portal spaces. The artery, veins, and bile duct are surrounded by thick fibrous tissue bands, densely infiltrated with lymphocytes. The farther away from the gumma that the portal spaces are the less is the infiltration and the less the endarteritic process. Near the gumma numerous vessels are completely occluded, but their structure is not lost as in the more central portions of the gumma. The blood-forming islands which are so commonly seen in congenital syphilis are not prominently present.

*Stomach.*—The block was taken from one of the gumma. The section shows that there has been no ulceration of the mucosa, but that the central depression is caused by the ring of thickening about it. The mucosa at some distance from the gumma is practically normal; closer to the gumma the glands become separated by a very cellular connective tissue which increases gradually, so that over the gumma the greater part of the mucosa is made up of fibrous tissue infiltrated with lymphocytes. The epithelium has lost its cylindrical form, and is scattered through the tissue in small acini of cuboidal and polygonal epithelium. The muscularis mucosa has been almost entirely destroyed within the limits of the gumma.

The most marked changes have taken place in the submucosa. Practically the entire increase in the thickness of the stomach wall is due to the inflammatory infiltration in the submucosa. The infiltration has a very definite relation to the vessels, both arteries

and veins, in that it seems to start from the adventitia and extend outward from them. This relation is best seen at the periphery of the gumma; in the center of the gumma the vessels have in part been completely occluded and destroyed, so that this relation does not stand out so clearly. In the gumma proper there are several large foci in which the connective tissue is crowded full of small round cells, showing a small central area of necrosis. Throughout the gumma there is considerable nuclear fragmentation. The typical syphilitic changes are seen in the vessels. The vessel wall shows two distinct processes: 1. An invasion of the adventitia and media by connective-tissue cells forming thick bands about the vessel, with usually an outer zone of small-celled infiltration; and 2. a marked proliferation of the endothelium, leading in many vessels to complete obliteration. With the Weigert elastic tissue stain the relation to the elastic membranes is well shown, especially the forcing apart of the fibers in the media by the connective tissue. The cellular infiltration about the vessels follows them into the muscular layer and is present about some of the subserous vessels also.

The changes produced by the spirochete pallida in the heart are confined almost entirely to the myocardium. Valvular and pericardial lesions are very rare. The myocardial changes are either circumscribed, the so-called gummata, or diffuse. In the latter case the changes may not be recognized macroscopically, but still present marked scleroses and cellular infiltrations in microscopic examination. Adler(2) reported a case in point. Mracek,(3) Foerster,(3) and Kundrat(3) emphasize besides these infiltrations, atrophic and degenerative changes of the myocardium explaining the great weakness that most of these cases present. Winogradow(3) has recently called attention to the infiltration in the ganglia of the heart with marked degenerative changes of the nerve cells. The vessels about these cells also showed degenerative changes and in some instances there were hemorrhages, which may account for the sudden death of some of these cases. Of fifty-eight cases reported by Fischer twenty-one died suddenly. The lesions in this case are of the circumscribed type, the so-called gummata, which are, however, quite different than the gummata of tertiary lues, and are really nothing more than the same sort of change as seen in the diffuse type, but confined to a definite area, as Mracek has already pointed out. The presence of gumma in the papillary muscles in all probability had much to do with the insufficiency of the heart. The changes in the liver are very frequent. Hochsinger describes four types:

1. Diffuse lymphoid infiltration of the connective tissue.

2. Hyperplasia of the connective tissue.
3. Miliary gummata.
4. Large syphiloma; of these the last is the most uncommon.

The diffuse changes are the commonest. The liver in this case showed one large gumma, and otherwise presented no changes.

The stomach is one of the rarer localizations for the action of the syphilitic virus. Up to the appearance of Aristoff's(4) communication there were only eight cases of gumma of the stomach described in congenital syphilis. Of these Birsch-Hirschfeld(5) reported two: the first, a large white projecting thickening of the pylorus; the second, an infiltrated ulcer of the cardia. Chiari reported one case in 1891(6) and a second in 1894,(7) both showing plaque-like thickenings of the submucosa, some of which were ulcerated. Bittner(8) described three cases, all of which showed the typical circumscribed infiltrations in the submucosa, some of which were ulcerated. Oberndorfer(9) reported a similar case with multiple gummata in the posterior wall. All but two of these cases showed also gummata of the small intestine. This very small number of cases of gummata of the stomach made it seem as though syphilitic lesions of the stomach were extremely rare. Aristoff was able to demonstrate in nine cases of congenital syphilis, that he examined very carefully both macroscopically and microscopically, lesions that were typically syphilitic in six, and very probably so in the remaining three. In two of the cases, which to the naked eye were entirely normal, the microscope revealed numerous typical gummata. One other case was anomalous in that, in the gross, small plaques were seen, which microscopically presented no direct evidence of syphilis.

Careful examination of a large series of cases will be necessary to verify the findings of Aristoff. In a series of 243 cases Chiari found stomach lesions in only 1.24 per cent. of the cases, Aristoff in 100 per cent. of the cases examined, a difference that needs an explanation.

1. Schlimpert. *Deutsch. med. Woch.*, 1906, S. 1037.
2. Adler. *New York Med. Journ.*, Oct. 23, 1898.
3. Herxheimer. Lubarsch-Ostertag, *Ergeb. f. Path.*, Bd. xii, S. 499.
4. Aristoff. *Zeitschrift f. Heilkunde*, vol. xix, 1899.
5. Birsch-Hirschfeld. *Lehrbuch der path. Anat.*, 4th Ed., vol. v.
6. Chiari. *Internat. Beiträge z. wiss. Med.*, part ii, p. 296, 1891.

7. Chiari. *Zeitschrift f. Heilkundes*, vol. xv, 1894.
8. Bittner. *Prager med. Wochenschrift*, No. 48, 1893.
9. Oberndorfer: *Virchow's Archiv.*, vol. clix, p. 179.

## DISCUSSION.

DR. W. J. BUTLER.—The Hutchinson teeth that are characteristic of congenital syphilis are the upper central incisors of the second set that have a peg shape; the cutting-edge is narrower than the neck of the tooth. The notching of the cutting-edge is really not essential. The treatment of syphilis in children is never carried out as energetically as in acquired syphilis. We do not differ as to the form of treatment, merely as to the form and manner of administration of the mercury. The treatment is mercury in the early stages, and mercury and potassium iodide in the later stages. These infants are never treated sufficiently long. They should be patients continuously, not for one or two years or several years. We know from our experience with the serum reaction that adults who are treated according to the usual methods for two or three years will frequently, some time after the treatment has been interrupted, show a reaction for syphilis. Where such a reaction is present, it must be regarded as an evidence of active syphilis, no matter whether the disease is apparent or not. The patient has syphilis some where, and needs treatment. The same thing is true of the infant. If treated thoroughly for years at intervals or continuously, we can never be sure of a cure. The other day I had a case of tabes referred to me. Twelve years ago the man was treated for three years continuously with mercury and iodides. He came into the clinic with a well-developed case of tabes. The same thing is true of infants. The infant with syphilis should always be a patient, because we can never be sure that it has been cured of syphilis.

DR. GEORGE F. SUKER.—I think the proper interpretation of the so-called Hutchinson teeth in these children is somewhat neglected. I have found that one should look for the signs of syphilis not only in the incisors, but as often if not more so in the molars. They have the characteristic pegs. Instead of the molars having four cusps, they have four tusks of dentine which are not covered by enamel. The enamel is restricted in its growth by the syphilitic poison while the dentine proliferates. These tusks are gradually worn down by grinding and mastication, and in their place are four yellow areas (the dentine), the site of the cusps, which are not covered by enamel. The characteristic peg tooth, *i.e.*, broad base and narrow, chipped edge, is indeed significant of syphilis.

So far as the Hutchinson triad is concerned, deafness is not an essential factor; but the otitis media, the interstitial keratitis, protruding lower jaw, rhagades around the mouth, protruding forehead, high-arched palate, and the saddle-nose are characteristics of a Hutchinson's head. An interstitial keratitis is pathognomonic of inherited syphilis, provided it occurs prior to the

age of puberty. Interstitial keratitis in the adult does not signify that the patient had syphilis in infancy, since there are well authenticated cases of same on record.

The fundus lesions of inherited syphilis are apt to be very misleading. There is no condition in the fundus that is pathognomonic of inherited syphilis. The principal characteristic fundus lesion is the powder grain fundus which in time may be due also to consanguinity, and not alone to syphilis. So far as the sight of these children is concerned, involvement of the meninges, as mentioned by the previous speaker, may produce a partial optic atrophy. Again these children are born with a congenital optic atrophy, are usually puny, and have marked defects of vision which cannot be improved by glasses. Nystagmus is frequently observed and this, in conjunction with polar cataract and some optic atrophy is not uncommon in inherited syphilis. A moderately white disk, atrophic type, with nystagmus and otitis media in a child are as conclusive of inherited syphilis as is Hutchinson's triad. These children also frequently have a reduced patellar reflex on either one or both sides. Another important point, so far as the eye is concerned, is the peculiar appearance of the iris. It loses its characteristic diaphragm appearance because the pigment layer is largely absorbed and hangs like a straight curtain without any folds. By transillumination the iris often shows marked areas of thinness.

So far as the treatment is concerned, I have obtained very good results from the feeding of fats and oils without any specific treatment, until the keratitis has practically subsided, and then I give mercury and iodide but only in moderate doses—the younger the child the more careful with mercury. Build up your patient and the eye will get along better then when you tamper with it and look upon it as only a local manifestation to be combated only by local measures.

So far as vision is concerned in interstitial keratitis, some eyes almost as white as paper may clear up very nicely provided the general health of the child is built up. Time is an important element, and we must not be discouraged. The opacities in the cornea are very deep, but seldom go on to ulceration.

Chorioretinal lesions are not as prone to appear in the congenital as in the acquired type of syphilis. Besides, the anterior portion of the globe is more apt to be involved in the congenital type than in the acquired type, *e.g.*, polar cataract, interstitial keratitis, etc. In the latter, the posterior portions are more apt to be involved, retinitis, chorioiditis, optic atrophy, etc. The younger the patient the greater the tendency for the involvement of the anterior portion of the globe. One may see a retinitis pigmentosa as the result of syphilis, the same though being often a consequence of consanguinity.

DR. JULIUS GRINKER.—There are a few things which have not been mentioned and which neurologists see occasionally. I think that many cases of backwardness in children are due to

syphilis in the parent, and to congenital syphilis, which has been very mild, not causing any gross lesions, but preventing the brain from developing normally. This, in turn, causes an underdevelopment of the cerebral centers, particularly those in the frontal lobe. These cases of mental retardation may be either slight in degree, such as the so-called high degree of imbecility, the most intelligent imbecile, or of the lowest types of idiocy. Close inquiry will often reveal syphilis in the parents and stigmata in the children. Another class of cases in which we have learned to inquire into the history for syphilis are the epileptics. We have idiopathic and symptomatic epilepsy, the latter, the so-called Jacksonian type, which undoubtedly points to gross organic disease in the cerebrum. I have reference particularly to the so-called idiopathic epilepsy—generalized fits without any cause. This disease is caused by a certain something about which we know nothing, and we are justified in searching carefully for evidences of syphilis both in the parents and in the child in order to find a tangible cause which admits of more successful therapy than the ordinary epilepsies.

I have come to rely mostly on the radiating scars about the mouth, Hutchinson's teeth, and chorioretinitis. These help me considerably in many cases. In cases of epilepsy with a hopeless prognosis, all we can do is to give bromides for years. I have found in both the acquired and congenital types that when bromides fail to produce any effect, the iodides diminish the attacks and prove otherwise beneficial. I would not say, however, that I have cured epilepsy even of the luetic variety.

Another class of patients with which neurologists are familiar and which are undoubtedly caused by syphilis, are the cases of juvenile tabes and paresis. They differ somewhat in their symptomatology from the ordinary tabes. In such children we find either the ordinary stigmata, or some definite symptom pointing to the previous existence of syphilis. But the tabes does not begin as in the adult. One of the first things to develop in these children is urinary incontinence or retention. At the age of nine or ten when habits of cleanliness have long been established it is noticed that these children begin to wet themselves. In a great many instances optic atrophy appears early, and may be the only sign. It is rather difficult to say whether the optic atrophy is the result of syphilis, or a beginning tabes. However, the lancinating pains do not seem to be a very conspicuous symptom. These patients also become somewhat unsteady on their feet. The optic atrophy, the slight paralysis of the spincters, the beginning ataxia, with loss of reflexes, and the Argyll-Robertson pupil are exceedingly characteristic of these as well as ordinary cases of tabes. In the juvenile types tabes sometimes runs a benign course, but these children do not often reach old age.

Juvenile paresis due to congenital syphilis, either acquired in early infancy or prenatally, also appears slightly different from

the ordinary general paresis. The disease makes its appearance when the patient is in perfect health, and usually when he has reached maturity or the acme of success. These children, brilliant in school up to this time, suddenly develop paretic speech, delusions of grandeur, and the other phenomena of general paresis, which last disease usually runs a rapid course.

Another peculiarity of juvenile paresis is that it often presents many of the phenomena common to dementia precox. In the latter condition we see the so-called mutism and stereotyped mannerisms. I have seen cases in which the existence of these symptoms made it exceedingly difficult to differentiate them from dementia precox. In every case of so-called dementia precox, with a suspicion of lues, we must bear in mind that we may have a case of juvenile paresis, and not one of dementia precox. Look for the Argyll-Robertson pupil, the exaggeration of the reflexes, the tremor, and the peculiar paretic speech.

As regards the nervous manifestations of congenital syphilis, I wish to cite one case in which there were undoubted evidences of congenital lues and in which, at the age of nineteen, a hemiplegia developed, as in an acquired syphilis, due to thrombosis. There were three different attacks culminating in aphasia and hemiplegia. The patient went along as an ordinary hemiplegic until a gummatous meningitis set in. Postmortem we found a thrombosis in the internal capsule leaving a scar, and a gelatinous, gummy coat covering the cortex, a so-called gummatous meningitis. These cases usually respond well to mixed treatment. Congenital cases of brain syphilis should be treated very energetically, and we often get brilliant results, just as in the acquired form.

Some of the muscular dystrophies are also ascribed to congenital lues, but there is still great uncertainty in the entire field of the muscular atrophies.

DR. F. S. CHURCHILL.—Dr. Krost seems to attach more importance to enlargement of the spleen as a diagnostic feature of syphilis than seems warrantable. He quoted Finkelstein to the effect that if rickets and tuberculosis could be excluded, it would be an important diagnostic sign of syphilis. I do not believe that to be the case.

He also stated that syphilis can be confused with leukemia. I do not see how that can be possible if a careful examination of the blood is made. The differential count gives an absolutely typical picture in leukemia, which is not the case in syphilis.

DR. KROST.—I meant particularly the spleen in children under three months old, when anemias are not common. In some cases of syphilis the blood picture is that of a leukemia, except that the white count is not high; almost all the cells are lymphocytes.

DR. CHURCHILL.—With which variety of leukemia would you confuse it?

DR. KROST.—Lymphatic leukemia, which at some periods has a very low count.

DR. CHURCHILL.—Just before death.

DR. KROST.—I have seen it also in the splenomedullary type.

DR. CHURCHILL.—The total count is of no importance, but the differential count is. It is on that count that I would base my diagnosis. As to the anemias of infancy, before three months, not being common, they are exceedingly *common*.

DR. B. C. CORBUS.—The diagnosis of congenital and acquired syphilis may be made by one of two ways: First, by finding the spirochete pallida in the lesions; second, by the Wassermann reaction. We found spirochete pallida in one case eight and one-half years after the primary lesion, in another four and one-half years afterward, and in a third, three and one-half years afterward. The latter occurs quite commonly. In one case of congenital syphilis we found the spirochete pallida in moist papules between the toes at three months. These children teem with spirochete pallida. It is from the livers of these children that we get the antigen for the Wassermann.

The more we work with the Wassermann the more we realize its value in diagnosis and in treatment. Neisser says, "that the Wassermann test reveals syphilis with such surety that he can now no longer be without it. A positive Wassermann is an absolute surety that syphilis is present. Negative tests are valuable as diagnostic aids, but not always infallible."

So far as the treatment of congenital syphilis is concerned, it should be instituted before conception occurs. No man or woman should be permitted to marry who does not show a negative Wassermann at least a year and a half previous to marriage. They should be kept negative for that time. The modern treatment of syphilis is chronic and energetic, not chronic and intermittent, as it used to be. Make your diagnosis early by finding the spirochete pallida and getting a positive Wassermann, and then keep the reaction negative for all time.

DR. I. A. ABT.—The clinical description of these cases in textbooks is frequently inadequate. The symptoms do not always occur in the sequence which is stated. Not sufficient importance is laid on some of the unusual symptoms. The classical case with snuffles, maculopapular eruption, does not always present itself in this form. Very frequently an infant who is born of known syphilitic parents shows no symptoms at all or only obscure signs later in childhood. Or another child presents no symptoms for the first six months of life, when it may show febrile reactions, furuncles, arthritis, visceral lesions, or some other sign which is not readily interpreted as of syphilitic origin.

With reference to syphilis and leukemia, I agree with Dr. Krost. I believe that the blood picture in syphilis very frequently resembles that of lymphatic leukemia. There are numerous reports in the literature showing lymphocytosis of 80 per cent. and over in cases of congenital syphilis.

Another point which may be referred to is that it is not so easy to treat these cases. After treatment is begun, the child very

often develops a diarrhea, colic, and restlessness, and fails to pick up if mercury is given by mouth. If given by inunction, dermatitis or severe constitutional symptoms may result. While the adult bears mercurialization, as a rule, without much difficulty, the child is easily intoxicated.

There are many exceptions to the text-book rule. I have seen cases of multiple gummata during the first year and also gumma of the larynx, proved on autopsy, in a child less than eighteen months old. Therefore, one of the important things that might be brought out in this connection is that text-book descriptions are for the most part inadequate, and not always borne out by clinical experience.

DR. W. J. BUTLER (closing).—It is often difficult to push mercury in syphilitic infants. The discussion has shown the great value of the Wassermann test because of the absence of characteristic symptoms in many of these cases. We certainly are not doing justice to our patients if we fail to control the interruption of their treatment by the Wassermann test. For ten years I have been looking for progressive paresis of the insane and tabes in children. I saw one case in my own clinic and one in Vienna, so that I am rather surprised to learn of the frequency of these cases in the practice of others.

DR. S. J. WALKER (closing).—I said that I had seen several of these cases—about three, I think.

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## ORIGINAL COMMUNICATIONS.

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### DIABETES IN CHILDREN.\*

BY

JULIUS RUDISCH, M. D.,

Attending Physician to Mt. Sinai Hospital, New York City.

THE subjects of etiology, pathology, and treatment of diabetes in children have been gone over so thoroughly and exhaustively by my predecessors that I need only dwell upon the peculiarities of diabetes in children as compared with that in adults.

*Etiology.*—In most of the cases in children no tangible cause could be found. They seemed to have more of the pure diabetes in the sense in which Naunyn uses it than diabetes due to organic diseases, such as affections of the liver, arteriosclerosis, obesity, diseases of the nervous system, etc.

Heredity plays just as large a rôle in children as in grown persons. In some families where one or both parents or some other members of the family had been afflicted, the disease showed itself in one, two, or three of the children.

\* Read before the Williamsburgh Medical Society, December 13, 1909.

An eruptive disease, such as measles, scarlatina, etc., often preceded the outbreak of diabetes.

Where syphilis has been the causative factor in some of these cases, an antisiphilitic treatment cured the patients of their trouble.

In some cases the etiology shows an abuse of sweets just as in grown people.

Van Norden questions very much if diabetes is as rare in children as is popularly supposed. He thinks that if the urines were examined as often as in adults many a case dying from some chronic indefinable disease would be found to be diabetes.

*Prognosis.*—The prognosis in children is much more unfavorable than in adults. According to the statistics of Bogeraz, which embrace some six hundred cases, the fatalities are over 90 per cent., and the duration of the disease rarely extends over more than two or three years. More often the unfavorable progress is extremely acute.

On the other hand, children, if cured, are usually cured permanently; that means that in after-life they no not differ from nondiabetics in their power of assimilating the carbohydrates, a condition which is unhappily very rare in the adult.

Incidentally I may mention the history of two cases of diabetes in children observed both by Drs. A. Jacobi and Kerley.

Dr. Jacobi has seen these two boys at the ages of three and five years, with a daily output of from two to four ounces of glucose. I will continue to cite their further history in the words of Dr. Kerley:

"The two boys have not had less than 6 per cent. of sugar in the last eight years. Including those two, I have seen eight undoubted cases of diabetes in children. The other six cases were rapidly fatal. One patient was nineteen months old and died within three months. The boys, eleven and fifteen years of age, are clinically perfectly well. Diabetes in children is associated with much thirst and the passage of large quantities of urine. These boys have good appetities and sleep well. There is no excess in the passage of urine and no excessive thirst. They have been a puzzle to two continents. The older boy, six feet in height and weighing 170 pounds, took three gold medals and three silver medals this year for long jump, high jump, and other athletic feats. The younger brother is of exactly the same type. They excrete sugar on a very strict diabetic diet, and though the excretion of sugar continues, they continue to thrive and grow.

They are living on a proteid diet and what the outcome will be we do not know. They are not ill, do not feel badly, and never have. The fact that sugar was found occurred through the desire of the mother to know that her four children were all well, as mothers will. She sent me a specimen of the urine of all four and I found the sugar in the two cases. The sugar was only discovered because the mother wanted the urine examined on general principles."

These two cases are unique. With these two exceptions, Dr. Jacobi's fifteen cases of children under twelve, all died in a comparatively short time. Few lived more than a few months after the diagnosis was made.

*Treatment.*—Now it remains for us to see in what respects the treatment of children differs from that of adults. First of all, it is the opinion of all practitioners that one of the reasons for their unfavorable course is the fact that children cannot be kept on as strict a diet as is necessary, nor can they be watched as thoroughly. I have myself had experience with children who, under the watchful eyes of the nurses, stole bread and sugar, so that I had to keep the patients in bed, and even then they contrived to get from the other patients forbidden foods. I do not doubt and I have had the experience to corroborate me that a strict surveillance of the patient, especially in institutions, will make it possible to obviate this difficulty, as every transgression will show itself immediately in an increased output of sugar. Diabetic children suffer from a voracious appetite. They get into the habit of eating large quantities, and in the beginning it is necessary to fill their stomachs with foods that will not overfeed, that will not give them too much carbohydrate or even too much protein and still satisfy their craving. I have found that cabbage and cauliflower, also spinach, watercress, if cooked for a couple of hours, with water poured off and a little beef or chicken broth added, will answer the above requirements. Green salads in large quantities, as much as they will eat, are also beneficial.

Cut down as much as possible proteids, meat, eggs, and cheese, as a superabundance is as detrimental as an excess of carbohydrates.

In regard to the quantity you will have to be guided by the condition of the patient, loss or increase of weight, and by the excretion of sugar.

Relishes like pickles, olives, tomatoes, are allowable in older children.

Nuts like walnuts, peanuts, almonds, in moderate quantity will benefit the patient.

Of the greatest importance in the feeding of these children is the use of fat. Of the fats I prefer codliver oil, or olive oil, if the patient can stand them, the more the better. Butter, especially fresh butter, is of great value, though in cases of acetonemia it is questionable whether the butyric acid does not too easily become converted into beta-oxybutyric acid.

The question arises whether these strenuous measures should be taken in every case of diabetes. A great many authors think that a certain amount of carbohydrates should be given to children where there is a large amount of diacetic acid in the urine. On this subject I can refer to my article on the treatment of diabetes mellitus as follows:

"The question arises as to whether or not we shall continue our attempt to reduce the glycosuria by the withdrawal of carbohydrates in the presence of large quantities of acetone and diacetic acid. This is the problem the practitioner is asked to face in all severer cases. He finds in the text-books that when acetone bodies appear in the urine he is immediately to add carbohydrates to the patient's diet to ward off the onset of coma. The results of my observations have led me to the conclusion that this dictum must not be applied indiscriminately, and that in very many cases of acidosis a strict protein diet is not merely not harmful, but even distinctly beneficial.

"The carbohydrates in severe diabetes do not enter into the patient's economy. They increase the hyperglycemia, are excreted as glucose in the urine, and often prevent but little, if at all, the formation of the acetone bodies.

"When a healthy person is suddenly deprived of all carbohydrate food, acetone, above the small quantity present normally, usually appears in the urine. Diacetic and beta-oxybutyric acids also appear occasionally. All these acetone bodies disappear in a few days, however, even though the carbohydrates continue to be withheld. In the majority of cases of diabetes, especially in those of a milder type, the same rule holds good. Most of the patients who enter the wards of Mt. Sinai Hospital with diabetes show acetone, and many of them have diacetic and beta-oxybutyric acids as well. I have up to now been fortunate in never having seen a single case in which coma

followed a strict protein and fat diet to the exclusion of all carbohydrates.

"Those patients who have been under observation and have been kept on a strict carbohydrate-free diet for some time form a different class. If they develop acetone bodies, it is necessary to allow them some carbohydrates, with a corresponding diminution in proteids, until the diacetic acid diminishes or disappears. We may thus be able to prevent the onset of coma."

As to medicinal treatment, alkalies, especially bicarbonate of soda, has proven itself in the hands of many practitioners of great value. It is certainly highly indicated in cases of acidosis. The quantity to be given will have to be regulated by the condition of the patient's stomach. Opiates in older children can be tried, especially where there is a neurotic element. As to very young children, opiates will have to be given, if at all, in a very careful way.

"It has been my good fortune to discover that atropin has a more marked influence on the sugar excretion than any of the drugs that have heretofore been tried. It has the advantage of being well borne in large doses, if given cautiously and in gradually increasing amounts. In two and a half years' clinical experience I have not found that a habit has been established in any case or that there are any bad effects on the general health from its prolonged administration.

"With atropin the glycosuria disappears much more rapidly than with a carbohydrate-free diet alone. When, with the cautious increase in carbohydrates in patients whose urine has become sugar-free, sugar again appears, it is often possible to suppress the sugar excretion solely by atropin without reducing the carbohydrates. In other words, the carbohydrate tolerance is greater with atropin than without. The sulphate is the form most generally used in the wards. Methyl bromide (Merck) has certain advantages. It is much less toxic than the sulphate and is therefore safer for patients who are not under daily supervision. Its action is not as striking as that of sulphate. The glycosuria does not disappear as rapidly nor is the limit of carbohydrate tolerance raised as soon as with the sulphate. Its expense, too, limits its use somewhat.

"Extremely large doses of methyl bromide of atropin are well borne if given with care. I have found that an initial dose of gr. 2/15 t. i. d. can be safely used in adults and can be increased by gr. 1/15 at a time until gr. 8/15 are being given three times

daily over a short period with no other disagreeable effect than dryness of the throat. In children I would advise gr.  $\frac{1}{60}$  t. i. d. as an initial dose.

"With the sulphate the initial dose in adults was gr.  $\frac{1}{150}$  t. i. d. increased slowly in some cases up to gr.  $\frac{1}{20}$  t. i. d. In the nine-year-old child the initial dose was gr.  $\frac{1}{250}$  t. i. d. which was increased up to gr.  $\frac{1}{10}$  per diem. Not all of my cases required anything approaching these maximum doses. Often a third of the maximum dose accomplished all that I wished.

"When the toxic effects were observed, a rapid pulse, flushed cheeks, dry throat and dilated pupils, I either stopped increasing the dose for a time or stopped the drug entirely. Later it was always possible to resume its administration and I was then able to give large doses without discomfort to the patient."

In some of the cases the Van Norden oatmeal diet has proved itself of great value. Herrick, of Chicago, reports some cases where the sugar disappeared entirely from the urine following its use.

39 EAST SIXTY-THIRD STREET.

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## DIAGNOSIS OF TYPHOID FEVER IN YOUNG CHILDREN.\*

BY

GEORGE N. ACKER, M. D.,  
Washington, D. C.

IN no disease is the diagnosis so difficult as in ill-defined cases of typhoid fever. With the special aids that we have at our command at the present time this difficulty is to a certain extent overcome, yet there are many cases in which the diagnosis must be held in abeyance, and if death occurs it is often impossible without an autopsy to be certain of the nature of the trouble. There are so many conditions which tend to obscure the diagnosis that one must always be on guard against making a false one, especially in this city where typhoid fever is endemic and is found every season of the year. During the past year I have seen a number of cases where the attending circumstances placed the diagnosis in doubt for many days. I will briefly relate some of these cases.

\* Read before the Washington Obstetrical and Gynecological Society, November 5, 1909.

CASE I.—August 24. A white boy aged five years came under my care with the history that since August 12th he had been sick in West Virginia with fever, headache, pains in abdomen, and tongue coated. The day before he was taken sick it was noticed that his right leg was partly paralyzed, and the physician consulted said that this was caused by a sprain. On examination I found that his temperature was 102.5, pulse 130, tongue coated, bowels torpid, and that he did not have any pain. There was a slight paralysis of the right leg and a loud blowing mitral systolic murmur. As the physician had assured the mother that the boy was in a good condition, he was not kept in bed after he returned home, and at the time of my visit was playing about the room. I directed him to be put to bed and ordered a liquid diet. A Widal reaction gave a positive result in a short time. The child had a temperature of 102 to 104 for a week and then it fell by lysis until September 6th, when it became subnormal. No rose spots observed or enlarged spleen felt.

In this case the paralysis evidently due to anterior poliomyelitis and the endocarditis obscured the diagnosis, and without the temperature range and Widal reaction, there was not anything to suggest typhoid fever. He has made a perfect recovery, having gained five pounds; and the paralysis is much improved, but the murmur is still present though not as loud as during the fever.

CASE II.—About the same time I attended a white girl five years of age, who had been treated for a week for a cold. She had a few râles in both lungs with a slight cough, but did not appear to be sick. The temperature was a moderate one, and never during the disease more than 103 by the mouth. The fever lasted three weeks, when it became subnormal.

The dicrotic pulse, tongue, constant temperature, and time of the fever caused me to have a Widal made with positive result. In this case there were no rose spots or enlarged spleen detected.

CASE III.—Last April I was called in consultation to decide whether a white girl, twelve years of age, has scarlet fever. One consultant had given this diagnosis and another thought that she had some lung trouble, but did not exactly make out the condition. I did not find any evidence of scarlet fever and the subsequent course of the disease and absence of desquamation is against this diagnosis.

The girl was taken sick a week before with headache, fever, coated tongue, and torpid bowels. There was a scarlatiniform rash which lasted several days, but was not present when I saw her. On examination I found the gastrointestinal and nervous symptoms well marked, no appetite, tongue coated, bowels constipated, some cough and distention of the abdomen. She was in a restless condition with semicoma, broncho-vesicular breathing, slight dullness on percussion, and some râles were found in upper lobe of right lung.

My opinion was against scarlet fever and in favor of pneu-

monia and possible typhoid fever. The pneumonia became well developed and underwent resolution, but the symptoms continued about the same.

The temperature ranged from 104 to 105° F. with a rapid pulse, and the child had a long, hard fight for her life, but she recovered and is now in perfect health.

The diagnosis of typhoid fever was made positive by Widal reaction, rose spots, and enlarged spleen. It must be remembered that a scarlatiniform erythema is occasionally seen with typhoid. This may be mistaken for scarlet fever or may lead to the conclusion that both diseases are present.

CASE IV.—During the summer a white girl eight years of age was sent to the Children's Hospital with the diagnosis of pneumonia. While there were numerous râles in the lungs, yet there was no bronchial breathing or dullness on percussion. The Widal reaction was negative at first, but rose spots appeared, and a subsequent Widal was positive.

CASE V.—About the middle of August I saw a case in consultation where the symptoms of meningitis were well marked with retraction of the head and convulsions, and the patient, a girl of twenty-two months, was in an unconscious condition when I examined her.

She was taken sick two weeks previously with vomiting, convulsions, high fever, rapid pulse, coated tongue, and loose bowels. The fever had continued high, 104 to 105, but had gone to normal two days before I saw her and had again become high.

The Widal reaction became doubtful but later on was positive.

The fever came down by lysis, and with the exception of an otitis she made a good recovery.

Some years ago I had under my care a case which I regarded as presenting some difficulty from the surrounding circumstances in making a diagnosis. The case from the history given on admission was diagnosed as typhoid fever, yet symptoms developed which made this doubtful, and if an autopsy had not been held I should have had doubts as to the accuracy of the diagnosis.

CASE VI.—Mabel Hilton, aged four years, female, colored, was admitted to the Children's Hospital, March 26th, 1905.

*Family History.*—Mother and father both living, neither in good health. Father has dropsy of lower limbs, and mother subject to attacks of tonsillitis and rheumatism. Two other children, one sick in this hospital with tubercular meningitis. Strong tubercular history on the mother's side, one sister and brother dying with the disease. No specific history given.

Labor normal. Breast-fed for two years, and then on a milk diet. Nothing definitely known of dentition, but not delayed.

Whooping-cough when eighteen months old, recovery good. Had influenza when two years of age, with perfect recovery.

Always a fairly healthy child. Five days ago taken sick with pain in head and abdomen. Fell while playing. Had fever and anorexia. The next day these symptoms continued with profuse diarrhea and desire to sleep. Was dull and languid. The following three days fever, headache, and anorexia were present with delirium and slight cough. Very restless at night. The diarrhea improved somewhat. No vomiting or epistaxis. Micturition was free and voluntary. Proper size for age; well-nourished child with rachitic deformity in lower limbs. Very dull, eyes heavy, apathetic. Skin moist and hot. No skin lesions. Glands not enlarged. Respiration shallow and diminished on left side. Left lung: Sharp, harsh breathing, middle and lower lobe anteriorly and over middle lobe posteriorly. Right lung: Bronchovesicular breathing over angle of scapula. Few râles.

Lips dry, tongue heavily coated. Gastric digestion poor. Stools loose, green with mucus. Abdomen distended. The spleen did not appear enlarged.

Delirious at times during night; very dull. Cerebrates slowly, sleeps poorly. Pupils dilated. Sluggish. Kernig's sign absent.

*Urinalysis*.—Acid reaction, sp. gr. 1030. Trace of albumin. Urea, gr. 12 to ounce. Microscopic examination negative. Ehrlich-Diazo reaction positive. Widal reaction negative.

March 27. Had such an active delirium that a straight jacket was necessary. Takes nourishment well. One large loose, yellow, partly digested stool. Micturition involuntary. Pulse good.

March 28. Quiet all night, five green undigested stools, pulse weak and rapid. Thirty-two ounces of nourishment taken.

March 29. Slept during night. Seven green undigested stools. Sleeps constantly dull, stupid and apathetic.

March 30. Quiet all night. Great difficulty in taking nourishment. Lies in semi-coma. Roused with difficulty. Twelve small, green, undigested stools. Cries out when disturbed. Pulse bad.

March 31. Very restless during night, almost impossible to give nourishment. Seven greenish-brown, undigested stools. At 6. A. M. a large round worm came from mouth. Groans constantly as if in pain. Condition grew worse with labored respiration. Coma and death at 5 P. M.

During the course of the disease the pulse was weak and ranged from 140 to 176, but for some days it kept from 160 to 168, thus did not show any marked irregularity. The respiration was from 38 to 56, but the average was from 40 to 44. The temperature was irregular and was not influenced by baths or medicines employed for that purpose. It fluctuated between 103 to 105° F.

*Necropsy*.—Heart soft; no endocarditis. Some effusion into pericardium. *Lungs*: Left middle lobe posteriorly solid, dark and congested; lower lobe hypostatic congestion, other portions fairly good condition. Right middle lobe congested, also lower

lobe. Bronchial glands enlarged. *Spleen* somewhat enlarged, friable, dark slate color. No tubercles. *Kidneys* congested. Capsule strips off right kidney; smaller than normal. *Liver* soft and friable. *Stomach* congested. Intestinal glands enlarged. Appendix congested and enlarged. Large ulcerations present from the ileocecal valve upward into small intestines, longitudinal with intestines, undermined and necrotic. No tubercle bacilli present. *Brain*: dura adherent over superior longitudinal fissure. Serous exudate over base and in fissures. Marked congestion. No tubercles. Pure culture of typhoid bacillus from the spleen was obtained by Dr. James Carroll.

A sister of the child, eight and one-half years of age, entered the hospital at the same time, with well-marked symptoms of tubercular meningitis and died in twenty hours. The necropsy showed serofibrinous basilar meningitis with few tubercles over superior longitudinal fissure. The tubercle bacillus was demonstrated. The lungs were infiltrated.

It will be noted that the family history, the sister being at the same time ill with tubercular meningitis, was strongly suspicious of tuberculosis. The child's previous history was good and the onset was sudden as is often found in typhoid fever in children. Though this fever is observed in the newly born and during the first few years of life, yet it is rare, under five years, to find well-marked cases of typhoid fever. In 970 cases reported by one observer, only 8 per cent. were under five years of age. The dry lips, heavily coated tongue, abdominal distention with pain and diarrhea which occurred in this case, are unusual symptoms in young children. Morse states in an article on typhoid in children that all of his fatal cases had diarrhea. Pain in the head with delirium was a marked feature from the first, this rapidly passed into semi-coma with dilated pupils. The nervous and digestive systems were both profoundly affected.

Holt lays stress on the diagnostic value of the enlargement of the spleen and rose spots in children. Tubercular meningitis was considered and put aside because Kernig's sign, which I regard as very reliable, was absent, and there were no muscular spasms or irregularity of the pulse or respiration.

General tuberculosis and typhoid not infrequently resemble each other so closely that for a week, or even two weeks, a differential diagnosis is impossible. It is especially in the typhoidal type of acute miliary tuberculosis that the resemblance of the two diseases is closest, and where in typhoid fever, the rose-colored spots do not appear, and the Widal reaction is negative, the delirium, distended abdomen, enlarged spleen, and even the irregular temperature at times common to both diseases may

make the resemblance so close that the diagnosis cannot be made until the postmortem examination.

I have seen several cases of estivo-autumnal fever which closely resembled enteric fever, and it was only after the malarial parasite was discovered that the diagnosis was made certain. Pneumonia in children often presents symptoms similar to typhoid fever, and a careful examination must be made in order not to be deceived. In this case the pulmonary signs were not such as to lead me to suspect an active pneumonia.

The colon bacteria are rather frequent excitants of diseases which may be clinically undistinguishable from typhoid fever. In this connection the Widal reaction is often of great value.

In early diagnosis, the culture of bacilli from the blood has proved the most certain and satisfactory. A small amount of blood (2 c.c.) can usually be taken from the ear, and by the use of Kasper's medium the organism can be obtained. This gives as good results as when larger amount of blood is taken from the vein. In the first week when Widal reaction is not certain the blood culture in ox bile becomes the chief factor in making a positive diagnosis, and in the later stages, when the organism can no longer be isolated from the blood, the agglutination reaction is usually present. While this is the most important method of diagnosis in typhoid fever, it is not certain, as the reaction is not always present in typhoid and may rarely occur in diseases such as paratyphoid, pneumococcus infections, and other conditions not closely allied to the typhoid groups.

In the case of a child in which I made the diagnosis of typhoid fever the reaction was positive, and the autopsy showed it to be a case of intestinal tuberculosis. The test in this case was made by an expert.

The diagnosis can also be made positive by the finding of the specific organism in the urine and feces, though it is rarely present before the tenth to the sixteenth day.

It has been the experience of nearly all who have seen much of typhoid in children that the eruption is less constant, less abundant, and less characteristic than in adults. The typical eruption consists of small scattered rose-colored spots which appear chiefly or solely upon the abdomen and at the beginning of the second week.

The Ehrlich-Diazo reaction can occur early, but in the majority of cases is present from the seventh to the tenth day of the disease. Not so much value is given to this reaction because

it is also found in acute tuberculosis, septicemia, measles, pneumonia, and probably in many acute febrile diseases. It is well marked only when the temperature is high.

The white blood count is an important aid in the differential diagnosis of typhoid fever. The absence of leukocytosis serves to exclude many diseases in which this is present, such as pneumonia, scarlet fever, and acute ileocolitis.

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### THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.\*

THE committee appointed by the President of the Washington Obstetrical and Gynecological Society to investigate the status of the preventive treatment of ophthalmia neonatorum begs leave to submit the following report: A circular letter was sent with the following questions to a number of maternities and obstetricians in the United States and Europe. 1. What is the routine treatment in your hospital for the prevention of ophthalmia neonatorum? 2. Would you recommend the treatment to be carried out by midwives? 3. Do you think the remedy should be dispensed by the health department?

Forty replies were received and are tabulated below. All employ prophylactic measures, but differ in the choice and strength of the solution, technic, regulation of midwives, and the advisability of the health department dispensing the drugs.

Twenty-three used silver nitrate: one  $1/2$  per cent.; ten 1 per cent.; two  $1\ 1/2$  per cent.; one  $1\ 1/2$  to 2 per cent.; nine 2 per cent., and in one the per cent. is not given. Fifteen use argyrol: one 5 per cent.; one 6 per cent.; one 16 per cent.; one 10 to 20 per cent.; four 20 per cent.; five 25 per cent.; one 25 to 50 per cent.; one 50 per cent.; and in one the per cent. is not mentioned. Five employ sophol, all 5 per cent. One prefers silver acetate, 1 per cent.; another hydrarg. bichlor., 1-2000. Protargol is used by four, but supplementary to nitrate of silver in three and hydrarg. bichlor. in one.

The questions 2 and 3 were only submitted to hospitals in the United States, and there were thirty-one replies; twenty-five favored the use of prophylactics by midwives, but several advise that the midwives be taught the proper methods of application, while others recommend that only the substitutes for

\* Read before the Washington Obstetrical and Gynecological Society, November 5, 1909.

THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.

			I	2	3	Remarks
1	S. A. Maternity.....	Birmingham, Ala.....	Argyrol.....			
2	Denver Maternity.....	Denver, Colo.....	Protargol, 5 per cent.; nitrate of silver, 1 per cent.	Yes ?	Yes Don't know.	Preliminary use of boric acid solution. Choice of solution depends upon clinical history and character of vaginal discharge.
3	Columbia Hospital.....	Washington, D. C.....	Argyrol, 25 per cent.; sophol, 5 per cent.	Yes	Yes	
4	Garfield Hospital.....	Washington, D. C.....	Argyrol, 25 per cent.	Yes	Yes	
5	National Homeopathic Hospital.....	Washington, D. C.....	Nitrate of silver, 1½ per cent.	Yes	Yes	Some months ago used 10 per cent. argyrol and it was found to be inefficient.
6	Freedmen's Hospital.....	Washington, D. C.....	Nitrate of silver, 2 per cent.; sophol, 5 per cent.	Yes	Yes	
7	Providence Hospital.....	Washington, D. C.....	Argyrol, 25 per cent.	Yes	Yes	Instillation every morning for three days. Solution should be prepared fresh every week.
8	George Washington University.....	Washington, D. C.....	Nitrate of silver, 2 per cent.	Yes	No	
9	Chicago Maternity Hospital.....	Chicago, Ill.....	Nitrate of silver, 2 per cent.; protargol, per cent. (?)	No	No	Infant's eyes first wiped dry with sterile cotton, then flushed with saturated solution of boric acid. Nitrate of silver is used in active infection; protargol in all other cases.
10	Washington Asylum Hospital.....	Washington, D. C.....	Nitrate of silver, ½ of 1 per cent.; argyrol, 6 per cent.	Yes	Yes	In eleven years, there were only three cases of ophthalmia and these were the result of careless application. Favors the enactment of laws to compel the instillation.
11	Georgetown University Hospital.....	Washington, D. C.....	Argyrol, 15 per cent.....	Yes	Yes	Only private cases received.
12	Chicago Maternity.....	Chicago, Ill.....	Silver nitrate, 2 per cent., protargol, per cent. (?)	?	No	Infant's eyes are first wiped with dry cotton, then flushed with saturated solution of boric acid and then one drop of silver solution instilled. The nitrate is used in cases where an active infection is known to exist. Protargol is used in all other cases. The attendant washes and dries the hands before handling the solution, and the infant is at once immersed in sterile water to free the hands and other surfaces of the vaginal secretions which may be

THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.—CONTINUED.

			1	2	3	Remarks
13	Chicago Lying-in Hospital and Dispensary.	Chicago, Ill.....	Argyrol, 20 per cent.....	Yes	Yes	the source of trouble later. 2. Does not believe in midwives at all. They are likely to do harm with such powerful drug as silver nitrate. They are a dangerous proposition any way you take them. 3. The health department should spend its energies in checking the spread of gonorrhea in the adult by other measures too often ignored and much more simple than furnishing drugs to midwives. Extreme cleanliness during delivery, vaginal douches to be given in cases of gonorrhea (and only in these), care to prevent anything from the vagina or on the baby's face from getting into the eyes during and after labor. Then one drop of the solution in the eye just after the first oil rub and wiping. Our only routine is cleanliness, but should any redness appear we use boric acid solution or permanganate potassium solution, and in infected cases nitrate of silver solution.
14	Union Park Maternity Home.....	Chicago, Ill.....	Silver nitrate, per cent. (?)	Can not advise	Don't know	The first toilet of the infant includes the Credé treatment of the child's eyes with 2 per cent. silver nitrate; this is not washed out as a rule.
15	Johns Hopkins Hospital.....	Baltimore, Md.....	Silver nitrate, 2 per cent.	Yes	Yes	The solution is dropped in eyes immediately after birth.
16	University of Maryland.....	Baltimore, Md.....	Silver nitrate, 1 per cent.	Yes	Yes	The solution is made fresh every two weeks. Before the baby is fully born the eyes are washed with boric acid solution, then the hands are wiped off; this is followed in a few minutes with two drops of the argyrol solution in each eye.
17	Maternity Hospital.....	Minneapolis, Minn.....	Argyrol, 50 per cent.....	Yes	?	Dispensing by the health department would make for more universal observance of the law.
18	St. Louis Maternity.....	St. Louis, Mo.....	Silver nitrate, 1 per cent.; argyrol, 5 per cent.	Yes	Yes	

THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.—CONTINUED.

			1	2	3	Remarks
19	Bethesda Maternity.....	St. Louis, Mo.....	Argyrol, 20 per cent.....	Yes	Yes	1. Instillation immediately after birth. 2. This or some other efficacious means should be required by law. 3. Furnished by the health department would impress on some the importance of the measure. Immediately after birth, in the delivery room, the eyes are washed out with 4 per cent. boric acid solution, and then a fresh solution of argyrol is instilled in the eyes. This treatment is repeated in the nursery on the next day. 2. The argyrol solution must be less than one week old to be efficacious, and there is grave doubt whether the midwife will keep the solution fresh. Silver nitrate is more stable and to be preferred for midwives for that reason.
20	Sloane Maternity.....	New York, N. Y.....	Argyrol, 20 per cent.....	Yes	Yes	Favors dispensing for free treatment. Solution prepared once a week. Thinks some of the silver salts would be more reliable.
21	Manhattan Maternity.....	New York, N. Y.....	Silver nitrate, 1 per cent..	Yes	Yes	1. Routine for prevention; the eyes are carefully wiped with dry sterile cotton by the nurse as soon as the baby is taken from the delivery room. Care is taken not to infect the conjunctival sac with the material that is wiped away from the surface of the eyelids.
22	City Hospital, Blackwell's Island.	New York, N. Y.....	Silver nitrate, 2 per cent..	Yes	Yes	Then when the eyes are open the sac is flooded with 25 or 50 per cent. argyrol solution. The excess is removed with dry cotton. The whole process is made as dry as possible, with a view of prevention of soiling eye sac by floating infected material into it. 2. This treatment should be carried out by midwives. We have never had a bad case of ophthalmia since this plan was
23	Manhattan Maternity and Dispensary.	New York, N. Y.....	Silver nitrate, 1 per cent..	No	Yes	
24	Brooklyn Hospital.....	Brooklyn, N. Y.....	Argyrol, 25 per cent.....	Yes	Yes	

THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.—CONTINUED.

			1	2	3	Remarks
25	Maternity Hospital.....	Cleveland, Ohio.....	Argyrol, 20 per cent.....	Yes	?	adopted, and only 2 per cent. of the cases showed any degree of conjunctivitis.  In known or suspected cases of infection a 1 per cent. solution is considered as efficient as the 2 per cent. used by Credé. 2. Yes, if the services of a physician cannot be obtained, but only according to the directions of the Committee on Ophthalmia Neonatorum of the American Medical Association, see <i>Journal A. M. A.</i> , May 23, 1908. The solution is carefully instilled in every case by the head nurse, followed by irrigation with salt solution. 2. Midwives should be instructed in its proper use. Unknown cases receive a vaginal douche of green soap and lysol. After the birth of the child the eyes are flushed with boric acid solution and several drops of 10-20 per cent. argyrol dropped into the eye. The lids are then carefully dried with sterile cotton dipped in boric acid solution. The use of argyrol in this way has been satisfactory and given us excellent results. We rarely have irritation of the conjunctiva and severe cases of infection do not develop. 2. I think midwives should be instructed to carry out this or some other adequate treatment in their practice. Would not trust midwife without training. Any midwife or doctor who would care enough about the matter to instill a solution would probably furnish it.
26	Ohio Maternity Hospital.....	Cincinnati, Ohio.....	Silver nitrate, 1 per cent.....	Yes	No	
27	University of Pennsylvania.....	Philadelphia, Pa.....	Silver nitrate, 2 per cent.....	Yes	Yes	
28	Preston Retreat.....	Philadelphia, Pa.....	Silver nitrate, 2 per cent.....	Yes	Yes	
29	Jefferson Maternity.....	Philadelphia, Pa.....	Argyrol, 10-20 per cent.....	Yes	Yes	
30	Maternity Hospital.....	Philadelphia, Pa.....	Credé method.....	No	No	
31	Providence Hospital.....	Providence, R. I.....	Silver nitrate, 1 per cent.....	Yes	?	

THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.—CONTINUED.

			I	2	3	Remarks
32	Name lost .....	?	Argyrol, 25 per cent. ....	Yes	No	Soap and water scrub and sterile water irrigation of vagina before labor. Boric acid lotion after birth. Argyrol is instilled when the baby is washed and followed by second boric acid cleansing. 3. Another socialistic measure.
33	British Lying-in Asylum .....	London, England. ....	Hydrag, bichlor. 1-2000; protargol, 10 per cent.	.....	.....	Preliminary bathing of the eyes with boric acid solution, then apply the bichloride by means of swabs. If the eyes a day or two after show any signs of infection, we paint the lids with a 10 per cent. solution of protargol and keep the eyes clean with boric acid solution.
34	Königl. Frauenklinik .....	Dresden, Germany. ....	Silver nitrate, 1 per cent. ....	.....	.....	Prof. Leopold says he never has any gonorrhoea with 1 per cent. nitrate of silver.
35	Belfast Maternity Hospital .....	Belfast, Ireland. ....	Nitrate of silver, gr. 4 oz. 1	.....	.....	Eyelids are first wiped with antiseptic cotton-wool, then eyes are flushed with boric acid lotion and a couple drops of the silver solution are dropped into each eye. The eyes are subsequently bathed four times a day with the boric acid solution.
36	Frauenklinik .....	Leipzig, Germany. ....	Acetate of silver, 1 per cent.	.....	.....	Zweifel has used 1 per cent. acetate of silver for fourteen years with excellent results. Only 0.02 per cent. gonorrhoea. Inflammation not more frequent or severe than with 1 per cent. nitrate of silver. He has used all other preparations of silver, but prefers the acetate.
37	Universitäts-Frauenklinik .....	Heidelberg, Germany. ....	Silver nitrate, 1 per cent. ....	.....	.....	Immediately after birth of the head the eyes are bathed with 2 per cent. solution of boric acid. Then the silver nitrate is instilled. The silver solution is renewed every week, with satisfactory result.

THE PREVENTIVE TREATMENT OF OPHTHALMIA NEONATORUM.—CONTINUED.

			1	2	3	Remarks
38	Frauenklinik.....	Wien, Austria.....	Silver nitrate, $1\frac{1}{2}$ to 2 per cent.	.....	.....	Chrobak has used the nitrate of silver in his clinic over nine years with excellent results.
39	Frauenspitale.....	Basel, Germany.....	Sophol, 5 per cent.....	.....	.....	v. Herff has used sophol in over 6,000 births with only one primary and one late infection. He regards it as the best prophylactic that has been so far produced.
40	Münchener, Frauenklinik.....	München, Germany..	Sophol, 5 per cent.....	.....	.....	In 1,436 births, one primary nongonorrheal infection; one late gonorrheal infection. There were three cases of irritation (0.02 per cent.) and eight others of conjunctivitis of varying intensity and occurring some days after birth, <i>i.e.</i> , late infection.

silver nitrate be employed by them. It is observed that those quoted in this report who oppose the treatment by midwives all use silver nitrate, and one of the objectors states that the drug is too powerful and dangerous to be entrusted to the uninitiated.

In reply to question 3: twenty recommend that the prophylactic be dispensed by the health department, while eleven object, one regarding it as another socialistic measure.

It is worthy of note that only 60 per cent. of the institutions quoted use silver nitrate exclusively. These figures were received from widely separated sources, and may reasonably be taken as a fair index of the trend of the prophylaxis of ophthalmia in the new-born.

Ophthalmia neonatorum has been known for many centuries, but it is only in a comparatively recent period that the disease has been recognized to be largely due to the direct or indirect contamination of the infant's eyes by the infected vaginal secretion.

Gibson, in 1807, drew attention to this fact and recommended the removal of the vaginal secretion and the cleansing of the infant's eyes, but his views were tardily accepted. It was many years later when the general belief that light, air, and dust were factors in its productions was abandoned and the true cause recognized. This was definitely settled when Neisser, in 1879, demonstrated the constant presence in the gonorrheal secretion of the vagina of a particular kind of diplococcus.

For a long time after every case of ophthalmia neonatorum was regarded as of gonorrheal origin, until Axenfeld showed that the pneumococcus and colon bacillus were occasional factors, and that the conjunctivitis was milder and of shorter duration than that due to the gonococcus. Since then the Loeffler bacillus, Kock-Weeks bacillus, micrococcus catarrhalis, streptococcus, staphylococcus, and other bacteria have been found in the secretion of inflamed eyes at birth. It is now generally estimated that 75 per cent. of the cases of ophthalmia neonatorum are caused by the gonococcus, and that the other germs produce at most an exaggerated catarrhal conjunctivitis which rarely leads to the disastrous results that so frequently follow gonorrheal infection.

After Credé, in 1881, published the result of his experience with the preventive treatment of ophthalmia neonatorum with 2 per cent. silver nitrate, it was quickly adopted in many maternities and clinics. The results were striking, and it was

hoped that a specific for this terrible scourge had been found. The morbidity was rapidly reduced from over 10 per cent. to less than 1 per cent., but as yet it has not been possible to prevent it completely.

The objection offered to the use of the 2 per cent. solution of silver nitrate is that it frequently produces a conjunctivitis of greater or less severity, requiring much nursing, and exposing others to the danger of infection from the transference of the discharge.

With a view of avoiding these drawbacks, many obstetricians are using a 1 per cent. solution, and Greef claims excellent results with a 1/4 of 1 per cent. solution.

During recent years a number of substitutes, the product of the synthetic chemist, have been introduced to replace silver nitrate. The claim for them is that they are equally as efficacious, that they penetrate more deeply, possess higher bactericidal power, and do not stain the conjunctiva or cornea, besides they can be instilled by the inexperienced without risk, and, lastly, they cause little, if any, pain. Clinical investigation has confirmed some of these claims and at the same time negated others.

A review of the literature shows that in this country silver nitrate, argyrol, and protargol are the remedies generally employed as prophylactics; while abroad, in addition to these, argonin, collargol, albargin, itrol, sophol, largin, silver acetate, etc., have been employed and recommended. Stephenson says that some of these have already sunk into well-merited oblivion, but others are calculated to replace silver nitrate at no distant day.

Argyrol is rapidly growing in favor, is largely used in private practice, and has been introduced into many hospitals. According to Cragin a 25 per cent. solution is equally as effective as one of 2 per cent. silver nitrate in gonorrheal ophthalmia, does not cause pain or produce irritation, and has the important advantage that it can be applied by the nurse, midwife, or layman without danger. He says, however, it is of comparatively little value in staphylococcus and streptococcus infections. In his service at the Sloane Maternity, in 8,000 births covering a period of seven years he used as a prophylactic measure five methods of treatment, with a view of selecting a solution that would give the greatest amount of disinfection with the least irritation. The results were as follows:

Series 1.—In 1,000 confinements, 2 per cent. silver nitrate solution; cases of ophthalmia, thirty-four; eyes lost, one; opacities, none.

Series 2.—In 1,000 confinements, 1 per cent. silver nitrate solution; cases of ophthalmia, thirty-four; eyes lost, one; opacities, none.

Series 3.—In 2,000 confinements, 5 per cent. protargol solution; cases of ophthalmia, fifty-three; eyes lost, one; opacities, one.

Series 4.—In 2,000 confinements, 10 per cent. argyrol solution; cases of ophthalmia, thirty-four; eyes lost, one; opacities, two.

Series 5.—In 2,000 confinements, 20 per cent. argyrol solution; cases of ophthalmia, forty-three; eyes lost, none; opacities, none.

This series covered a period when there was an epidemic of "pink eye" in the city, and as no gonococci were present in the eyes during the month of its prevalence it was thought by the ophthalmologist who saw the cases in consultation that they were cases of pink eye.

Cragin says that, while with the use of  $\frac{1}{2}$  per cent. silver nitrate solution and 5 per cent. protargol solution there was less irritation, it looked as if it was gained at the expense of protection, and their use was therefore abandoned. With the 10 per cent. argyrol solution there was complete absence of irritation; but it was found upon clinical and bacteriological investigation to be of insufficient strength, and therefore did not afford complete immunity.

The 2 per cent. silver nitrate solution and the 20 per cent. argyrol solution were proven to be absolutely bactericidal, and the latter is to be preferred because of its freedom from irritation and it can be applied at frequent intervals, if necessary, with safety.

We have collected from the records of Columbia Hospital, Washington, D. C., from 1882 to June, 1909, 205 cases of ophthalmia occurring in 7,236 confinements; 176 cases were reported as cured and twenty-seven were improved at the time of leaving the hospital, so the final result of the latter is not known. There were two cases of blindness, one, total; in the other one eye was lost. There were five cases with opacities of one cornea and one with opacities of both corneas. The earlier records are wanting in microscopical examination; but clinically a large percentage of primary ophthalmia were diagnosed as gonorrheal, while the infections occurring some days after birth were generally

ascribed to other pathogenic organisms. In 1904, argyrol was introduced, first using a 10 per cent. solution; but as this did not prevent ophthalmia, it was increased to 25 per cent. There had been no cases of blindness or opacities since its introduction.

Professor Zweifel speaks enthusiastically of the acetate of silver in the prevention of ophthalmia. In a letter recently received from him, he says that in fourteen years' experience with the drug, blennorrhea occurred in only about 0.02 per cent. of the cases. Irritation is not more frequent or greater than with 1 per cent. silver nitrate, as was demonstrated by using the silver nitrate in one eye and the silver acetate in the other. Seitz has obtained a like favorable result in 1,000 births in the München Frauenklinik and Scipiades in the Traufferschen Klinik, Budapest.

Darier and his pupil Valencon are warm advocates of protargol. They employ it in 15 to 20 per cent. solution, and find it to be less painful and irritating than silver nitrate.

Englemann, using protargol, in the Bonner Frauenklinik observed 20 per cent. of infection, usually of mild character, in 1,000 births.

Piotrowsky, in the Hebammenlehranstalt, Krakau, noted 10 per cent. reaction in the treatment of 1,030 cases after the use of a 10 per cent. solution of protargol.

V. Herff, in the Frauenspitale, Basel-Stadt, in 3,009 births, with the use of protargol, had only two late infections, but there was 30 per cent. primary reaction.

V. Herff, in endeavoring to find a substitute for silver nitrate possessing equal germicidal power but free from its objectionable properties, first tried protargol. While, as just stated, there were no primary infections, he discarded it because of the large percentage of inflammatory reactions. He next tried argyrol, in 520 births, but not being entirely satisfied, he experimented with sophol. It is a combination of formaldehyde, nucleinic acid, and 22 per cent. silver. Sophol is a yellowish-white powder, easily soluble in water. The solution must be prepared with cold water, as a warm solution dissociates the loose combination of the formaldehyde in the preparation. In over 6,000 births, V. Herff says there were one primary and one late infection. The early case of infection was due to inoculation in a known gonorrheal case during labor in which a prolapsed cord was replaced. The late infection occurred on the ninth day in an infant whose mother was suffering with condylomata of the vulva. There was 10 per cent. primary reaction usually of mild character.

In 1,436 births in which sophol was used, in the Münchener Frauenklinik, there were one primary infection (0.07 per cent.); one late infection (0.07 per cent.), and three cases of inflammatory reaction of mild intensity.

Beginning in January, 1909, Menge has employed sophol in the Universitäts-Frauenklinik, Heidelberg. The sophol solution has been instilled into the left eye of the infant, and a 1 per cent. silver nitrate solution into the right eye. He finds that irritation occurs less frequently with sophol. Two cases of true blenor-rhea, both late infections, have occurred this year, both in the second week. The left eye was infected in one infant and the right eye in the other.

Gallatia reports the use of sophol as a prophylactic in 280 births in the Landenspitales, Laibach. There was no early infection notwithstanding that two of the mothers were suffering with gonorrheal vaginitis at the time of delivery.

Bock and Kraus have also used sophol in inflammatory diseases of the eyes with excellent results. Bock finds it to be particularly effective in recent cases; but in those of long standing, while it rapidly diminishes the discharge, in many instances it is necessary to resort to the use of silver nitrate to effect a cure.

The committee being much impressed with the excellent results obtained with sophol by V. Herff and others was anxious to give it a trial. Though the courtesy of Dr. Cabell, of the Visiting Staff of Columbia Hospital, and Dr. Lawson, of the Visiting Staff of Freedman's Hospital, the remedy was used in these institutions during the past summer. A 5 per cent. solution was employed, and it was freshly prepared every two weeks. Altogether, the solution was instilled into the eyes of 153 infants, ninety-three in Columbia Hospital and sixty in Freedman's Hospital. Of those treated at Columbia Hospital, there were thirteen with primary irritation, lasting from a few hours to several days, all yielding to boric acid irrigation. There was no primary infection, although one mother had been under treatment in the Hospital for more than a week prior to the delivery for a severe case of gonorrheal vulvovaginitis. The infant's eyes were wide open immediately after birth and had a dull glazed appearance, with clouded cornea. Prompt instillation was made and no infection followed.

There were eight late infections, occurring from third to the fourteenth day after birth. Six yielded to the sophol and boric acid applications in from a few hours to eight days. One case

in which the lanceolatus was found left the hospital on the eleventh day of treatment, improved; and another in which the microscopical examination was negative left also on the eleventh day of treatment, improved.

Dr. Lawson reports that sixty infants received the 5 per cent. sophol solution at birth in Freedman's Hospital, and the results were very satisfactory. In but one case was there anything more than a slight inflammatory reaction observed. One baby developed a purulent conjunctivitis, which was slight and cleared up within five days, during which time the sophol solution was instilled three times daily. The mother in this case had a marked vaginal discharge at the time of confinement.

Our personal experience with the use of sophol is in accord with that of other investigators and we regard it as a safe and effective measure for the prevention of ophthalmia neonatorum.

Professor Von Herff states, in a recent letter, that sophol is also effective in ophthalmia due to other germs besides the gonococcus; that it is less painful and irritating than any of the silver preparations, save argyrol; while as regards stability, it excels them all. In substance, sophol has remained unchanged for four years, and a solution six months old has been found in the Münchener Frauenklinik not to irritate any more than a fresh one. The drug can be dispensed in tablet form as well as in solution, thereby making it very convenient for general use.

All of the silver salts are unstable and decompose more or less rapidly on exposure to light and air. Another drawback to the use of silver nitrate and its organic substitutes, is the inconstancy of the solutions; and many cases are on record where these preparations were increased to several times their original strength by evaporation, and where their application caused marked inflammatory reaction and even the loss of normal eyes. Koch relates a case of destructive inflammation and subsequent blindness in which a midwife used a solution of silver nitrate which, owing to a defective stopper and consequent evaporation, had increased in strength from 2 per cent. to 3.2 per cent.

Precipitation takes place in all of the silver salt solutions in a longer or shorter time when subjected to atmospheric conditions. In order to obviate these occurrences, the solutions should be freshly prepared at frequent intervals, and stored in lacquered or dark-colored bottles and kept in the dark. For individual use the solutions should be dispensed in sterilized tubes, sealed with paraffine.

As the use of silver nitrate requires absolute precision to prevent serious injury to the eyes, its instillation should *never be entrusted to the midwife*. One of the silver substitutes, preferably sophol, argyrol or protargol, which are comparatively free from such dangers, could with safety be used by anyone.

More than 50 per cent. of confinements are in charge of midwives, and at least 30 per cent. of blindness is due to ophthalmia neonatorum. It has been clearly proven that gonorrheal ophthalmia can be prevented in the majority of cases, and, when it does occur, early and intelligent treatment will effect its cure with almost absolute certainty. These facts emphasize the necessity for the enactment of laws placing the supervisory control and licensing of midwives with boards of health.

From the foregoing data it is seen that the use of a 2 per cent. solution of silver nitrate is very effective in the prevention of ophthalmia neonatorum, but is very painful and often attended with marked inflammatory reaction; the 1 per cent. solution, while less irritating, does not insure immunity. Of all the silver preparations considered, sophol 5 per cent., argyrol 25 to 50 per cent., and protargol 10 to 20 per cent., are to be preferred because they produce comparatively little pain and irritation, and can be employed by the inexperienced without risk.

In conclusion, the committee recommends:

1. That immediately following birth of the infant, the eyes should be carefully wiped with sterile gauze dipped in a saturated solution of boric acid and then a 5 per cent. sophol, 25 to 50 per cent. argyrol, or 10 to 20 per cent. protargol solution used as a prophylactic against ophthalmia neonatorum.

Since late infection comprises one-fourth of the cases of ophthalmia neonatorum and may be due to faulty application of the prophylactic, or latent gonorrhea, but is more often the result of contamination from the vaginal secretion because of lack of vigilance, or ignorance on the part of attendant or mother; therefore the nurse should be instructed to thoroughly scrub her hands with soap and water and disinfect them before washing the infant's eyes, dressing the navel, and bathing the mother. The mother's hands should be cleansed several times daily, particular attention being given to the nails, and she should be repeatedly warned as to the danger of the lochia. By careful attention to these precautions the morbidity from ophthalmia can be greatly reduced if not entirely controlled.

2. That the solutions be dispensed in amber-colored sterile tubes sealed with paraffine for use by midwives; a small quantity of sterile gauze be placed in the prophylactic package.

3. That suitable instructions as to technic be printed on the birth certificates.

4. That legislation be enacted for the control of midwives.

5. That midwives be compelled to make report of births within 24 hours following delivery.

6. That the health department furnish the drugs gratuitously to indigent cases.

7. That in cases of ophthalmia occurring in patients under the charge of midwives they be required to summon a physician immediately or notify the health department promptly.

Finally what is needed to control this scourge is a hearty co-operation of the medical profession with the health authorities.

The committee is greatly indebted to Drs. Breckenridge, Maclay, and Neale, internes, Columbia Hospital, and Drs. Quander, Ish, and Henry, internes, Freedman's Hospital, for their co-operation and report.

Respectfully,

(Signed)

JNO. F. MORAN, M. D.

W. M. SPRIGG, M. D.

#### BIBLIOGRAPHY.

1. Axenfeld. Ueber nicht gonorrhoeische Blenorrhœa des Conjunctiva. *Deutsche medizin. Wochenschr.*, 1898, No. 44, S. 293.

2. Bock. Sophol in der Augenheilkunde. *Wochenschr. für Therapie und Hygiene des Auges*, No. 32.

3. Cragin. Transactions Am. Gyn. Society, 1907.

4. Credé. Die Verhütung der Augenentzündung der Neugeborenen. *Arch. für Gynäk.*, Bd. xvii, 1881, S. 50; Bd. xviii, 1881, S. 367; Bd. xxi, S. 179.

5. Darier. Protargol bei Conjunctivitis blenorrhœica. Die ophthalm. Klinik, No. 7; Frommels Jahresbericht, Bd. xii; *Centralbl. f. Gynäk.*, 1905, p. 86.

6. Derby. *Boston Med. and Surg. J.*, Boston, 1908, 149, 825-827.

7. Englemann. Nochmals das Protargols bei der Credéschen Augeneinträufung. *Zentralbl. f. Gynäk.*, 1900, No. 51. Ueber die Verwendung des Protargols an Stelle des Argent nitr. bei der Credéschen Einträufung. *Zentralbl. f. Gyn.*, 1899, No. 51.

8. Feulner. Ueber die präventive Behandlung der Augeneiterung der Neugeborenen mit Berücksichtigung der neuen Mittel, besonders des Sophols. Inaugural Dissertation, München, 1909.

9. Ford. Hospital, London, 1908, 43, 573.

10. Gallatin. Sophol als Vorbeugungsmittel, bei Ophthalmo-

blenorrhœa neonatorum. *Wiener medicin. Wochenschr.*, No. 6, 1908.

11. Greef. *Berliner klin. Wochenschr.*, 1901, No. 6; *Therap. d. Gegenw.*, Berlin, 1908, 49, 27-30.

12. V. Herff. Kann man die Zahl der Erkrankungen an Ophthalgo-blenorrhœa gonorrhœica verringern. *Gynäkologische Rundschau*, 1907, No. 19. Sophol; *Zentralbl. f. Gyn.*, Leipzig, 1908, No. 42. Zur Behandlung der Augengonorrhœa, 1908, No. 46. Zur Verhütung der gonorrhœischen Ophthalgoblenorrhœa mit Sophol. *München. medicin., Wochenschr.*, 1906, No. 20.

13. Harman. Prevention of Blindness, etc. *Public Health*, 1908-9, 22, 115-122.

14. Koch. *Zeitschr. f. med. Beamte*, 1901, Suppl.

15. Kraus. Sophol. Die Heilkunde (see *Münch. med. Wochenschr.*, 1908, No. 39).

16. Leopold. *Berliner klin. Wochenschr.*, 1906, p. 846; *Münchener med. Wochenschr.*, 1906, p. 769.

17. Moetier. *Ophthalmoscope*, London, 1908, 6, 2-8.

18. Piotrowsky. Die Verwendung des Protargols zur Verhütung der Augeneiterung des Neugeborenen. *Zentralbl. f. Gyn.*, 1901, No. 31.

19. Pinard. *Ann. de Gyn. et d'Obstét.*, 1902, Jan. and Feb.

20. V. Porter. Erfolge der Credéschen Prophylaxe an der Heidelberg. Frauenklinik, Heidelberg, 1908.

21. Scipiades. Volkmannsche Sammlung, No. 345, 1904.

22. Stephenson. *Med. Press and Circular*, 1904.

23. Wharton. *Ophthalmoscope*, London, 1909, 7, 19-23.

24. Wheeler. Control of Ophthalmia Neonatorum. *North American J. Homeopathy*, N. Y., 1909, 17, 71-78.

25. V. Zweifel. *Centralbl. f. Gynäk.*, 1900, 1361 and 1486.

26. Report of Committee on Ophthalmia Neonatorum of the American Med. Association. See *Journal A. M. A.*, May 23, 1908.

27. New York Association for the Blind, Special Committee on Prevention of Blindness, No. 2.

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## REVIEW.

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FUNCTIONAL NERVOUS DISORDERS IN CHILDHOOD. By LEONARD GUTHRIE, M. D., F. R. C. P., Senior Physician, Paddington Green Children's Hospital; Physician to the Hospital for Paralysis and Epilepsy, Maida Vale, etc. Pp. 300, 1 plate. \$3.00. Oxford University Press, American Branch, 35 West Thirty-second Street, New York.

This volume which the author modestly disclaims as an exhaustive treatise, but states has been elaborated and built up upon the nucleus of various addresses and papers, is not to be judged by the ordinary criteria applied to medical works in

general designed to be used as text-books. But to the practitioner who is frequently called upon to advise with reference to the management of nervous or emotional children it opens new avenues of thought, for its somewhat discursive style allows a broader treatment of the subject than would be possible in the usual manual upon nervous diseases. Nevertheless, as we read the pages we are soon convinced that the author writes with a wide experience of the subjects of which he treats. We do not, as a rule, expect to find humor in books of serious purpose nor are we more especially prepared to find it among British writers. Here, however, there is a surprise before us. The description of the life history of the individual who begins as an unemotional child is a delightful bit of humorous writing, all the more so because the accurate drawing of the type is obvious. It forms an excellent foil by contrast to the subsequent pictures of the emotional phases of childhood. To the American reader the scattered references to life in the English public schools and its influence upon neurotic children inevitably make us thankful that many of these features have no place in our foremost educational institutions. One is also left with the suspicion that when the art of feeding infants and children attains in England to some of the dignity and importance which has been accorded it among the intelligent classes of this country there will be a proportionate reduction of functional nervous disorders in their ranks. Of treatment *per se* the volume perhaps contains little, but of wise suggestion much. Altogether it is a book which no one will regret reading or wish to lay down and the enjoyment is augmented by the use by the printer of the light English paper which makes a sizable book, easy to carry or hold.

T. S. S.

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## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Morphine in Infant Therapeutics.**—Ch. Laubry (*La Trib. Méd.*, September 18, 1909) believes that the danger of the use of morphine in infants has been greatly exaggerated, and that properly used it is of great value. The author employs a syrup of morphine made in the following proportions: 100 c.c. of water with 2 to 3 grm. of syrup of morphine. Of this the dose varies from 2 to 18 grm. according to the age of the child. The tolerance is perfect, only slight vomiting having occurred in a few cases. It is of value in the agitation of eruptive fevers; in spasmodic affections of the respiratory tract, such as pertussis, asthma, and laryngitis stridulus and in acute gastroenteritis. In whooping-cough it seems to lessen the violence of the attacks and their frequency and improves the general condition, while vomiting ceases and appetite improves. In croup it acts as a

cardiac tonic, lessens the respiratory excitability, and the liability to need intubation. Other authors deny these effects. Morphine and codeine are better borne than opium.

**Anterior Poliomyelitis Limited to Lower Dorsal Region.**—A marked contrast to the ordinary type of case is presented by that of a boy of eight years whose history is recorded by C. P. Lapage (*Brit. Jour. Child. Dis.*, Nov., 1909). There was at first slight apparent weakness of one leg for a short time only. Twelve weeks after the onset of the illness he was very weak and unable to raise himself into a sitting posture. The most striking symptom was ballooning of the abdomen, combined with a falling-in of the lower part of the chest-wall, and a general kyphosis of the dorsal region of the spine. The abdominal muscles did not react to the faradic current, and constipation was an obstinate and a troublesome symptom. Eighteen months later the abdominal muscles were found completely paralyzed except for two narrow bands about one-eighth inch in width, stretching, one from the tenth rib on the left to the umbilicus and the other from the umbilicus to Poupart's ligament on the right. These bands showed marked fibrillary contractions and were very excitable. During respiration the abdomen ballooned out above and below these narrow strips of unparalyzed muscle, and the lower part of the chest-wall was depressed. The lower three or four intercostal muscles were also paralyzed. The erector spinæ over the lower dorsal and upper lumbar regions were much wasted. The psoas muscles on each side were hypertrophied, and when the patient struggled into a sitting posture, these muscles could be felt as large tense bands in each iliac fossa.

**Appendicitis in Children.**—A. H. Bogart (*L. I. Med. Jour.*, November 1909) has a mortality record of 17  $\frac{1}{3}$  per cent. in forty-six cases. He finds that other writers report an average of 16 per cent., much higher than in adults. Appendicitis in children is a comparatively frequent disease, insidious in its onset and rapid in its development, with a decided tendency toward the development of general peritonitis, with a fatal termination if neglected; and whatever holds good with regard to immediate operation in the adult is doubly true in children, and no case should be permitted to go for three days without operation. Adhesions are less common than in adults and are extremely friable, so great care must be used not to break through into the peritoneal cavity. Protecting sponges should be avoided when possible as their use endangers adhesions and often spreads infection. Although he used drainage in thirty of his cases, the writer says that it should be omitted if possible.

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AND

## DISEASES OF WOMEN AND CHILDREN.

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### ORIGINAL COMMUNICATIONS.

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#### INTRAMURAL ABSCESS OF THE PUERPERAL UTERUS.\*

BY

JOHN A. SAMPSON, M. D.,  
Albany, N. Y.

(With thirteen illustrations.)

JUDGING by the meager account of this condition in the text-books on gynecology and obstetrics (not mentioned at all in some) and also by the small number of cases reported in the literature, one would infer that it is of very rare occurrence.

In the year 1901, von Franqué reviewed the subject of uterine abscess in an excellent monograph (*Uterusabscess und Metritis dissecans, Sammlung klinischer Vorträge, New Series, No. 316*). He collected from the literature only fifteen authentic cases, of which seven were of puerperal origin. The article contains abstracts of all the authentic cases and also of the doubtful ones. Five years later, Noble briefly reported four cases of abscess of the puerperal uterus, making in all eight which had occurred in his practice. He collected eleven others from the literature which, with his eight, he arranged in tabulated form (*Intramural Abscess of the Puerperal Uterus, Transactions of the American Gynecological Society, 1906, vol. xxxi, pages 296 to 301*). The following year, Mercadé reviewed the subject of uterine abscess and stated that, from a very exhaustive study of the literature, he was able to find forty-one authentic cases, of which twenty-two were of puerperal origin (*Les Abscès de l'Utérus, Annales de Gynécologie et D'Obstétrique, 1907, Second Series, vol. iv,*

\* Read before the Society of the Alumni of the Sloane Maternity, January 29, 1910.

pages 29 to 48). Since the papers of Noble and Mercadé, I have been able to find only a few isolated cases reported.

On account of the apparent rarity of this condition and especially because I believe that it is of much more frequent occurrence than the number of reported cases indicates, I wish to describe the following four cases somewhat in detail.

CASE I.—*Intramural abscess (streptococcus) of the left uterine cornu, resulting from puerperal infection following instrumental delivery. Abscess incised and drained extraperitoneally. Recovery.*

The patient, Mrs. O. W. (mulatto), age twenty-eight, married four years, had been pregnant but once and that terminated in the labor from which the puerperal infection dated.

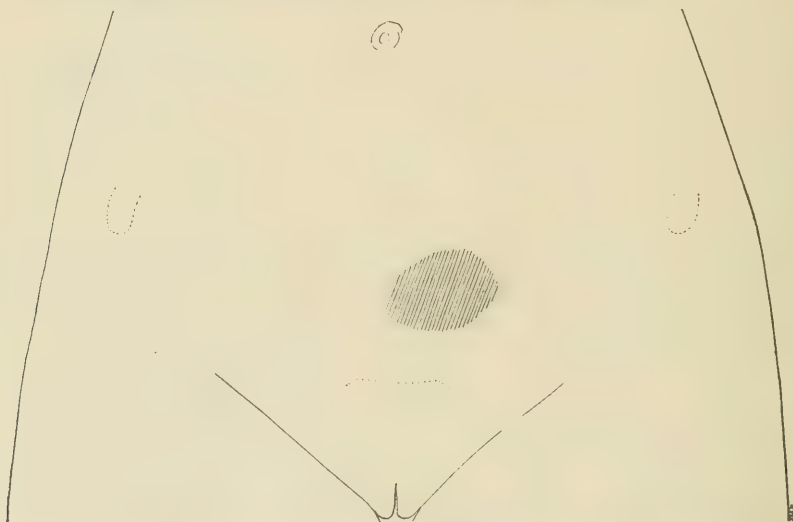


FIG. 1.—Tracing of the abdomen in Case I (intramural abscess (streptococcus) of the left uterine cornu, with adherent sigmoid, following instrumental delivery),  $\times \frac{1}{3}$ .

The tracing was made before the operation. The shading indicates the area of tenderness and the resistance which could be palpated to the left of the median line.

Labor occurred six weeks before she came under my care, lasted thirty-six hours and was terminated by forceps; the child was dead when born. Further details of the labor and the history for the six weeks following were unsatisfactory, as the physician in attendance had left the city. The patient stated that, since the labor, she had suffered from abdominal pain, worse on the left side, and that it was aggravated by taking food. She had been in bed all the time except for the last week, when she would occasionally get up and sit in a chair. She had not had chills and did not know if fever had been present.

She was admitted to the Albany Hospital, July 25, 1905, and operated upon two days later.

Before operation, the temperature ranged between  $99^{\circ}$  and  $100^{\circ}$  and the pulse 90 to 110. The patient appeared ill and anemic; hemoglobin 48 per cent. and leukocytes 12,000. The general physical examination was otherwise negative. On abdominal palpation, tenderness was detected to the left of the median line just above the pelvic brim, where an indefinite mass could be felt (see Fig. 1). On bimanual palpation, the cervix was found to be situated to the right of the mid-line; the body of the uterus was enlarged to the size of a six to eight weeks' pregnancy and drawn to the left. About the left cornu an indefinite mass, like a myoma of about 5 cm. in diameter, could be felt. The movements of the uterus were somewhat restricted, but otherwise the examination was negative. A diagnosis of either an ovarian



FIG. 2.—Conditions found at operation in Case I,  $\times 1/3$ .

The sigmoid was adherent to the left uterine cornu which contained a fluctuant tumor presenting anteriorly and also between the layers of the left broad ligament. The tubes and ovaries, aside from a few light adhesions, were normal.

abscess or an abscess in the upper portion of the broad ligament was made.

*Operation.*—Patient in Trendelenburg position, median incision; the uterus was found enlarged as indicated by pelvic palpation. A fluctuant tumor occupied the left uterine cornu and presented anteriorly, and also between the folds of the left broad ligament; the general appearance was that of a fibroid of about 5 cm. in diameter occupying this portion of the uterus. The sigmoid was firmly adherent to the fundus of the uterus about the upper portion of the tumor (see Figs. 2 and 3). The tubes and ovaries, except for a few adhesions, were normal. It occurred to me that the abscess might be incised and drained extra-

peritoneally. A small incision was made opposite the middle of the left Poupart's ligament, and the muscle fibers of the abdominal wall were separated, as in a McBurney incision, down to the peritoneum. The round ligament was next located and freed without opening the peritoneal cavity and, by drawing on this, the left cornu was drawn up to the wound. A curved clamp was passed between the layers of the broad ligament and pushed into the abscess, thus evacuating it extraperitoneally (see Fig. 4). I next incised the anterior wall of the collapsed abscess with a Pacquelin cautery (through the median incision) and, pushing the end of the clamp mentioned above through this incision, grasped the ends of three iodoform-gauze drains and drew them

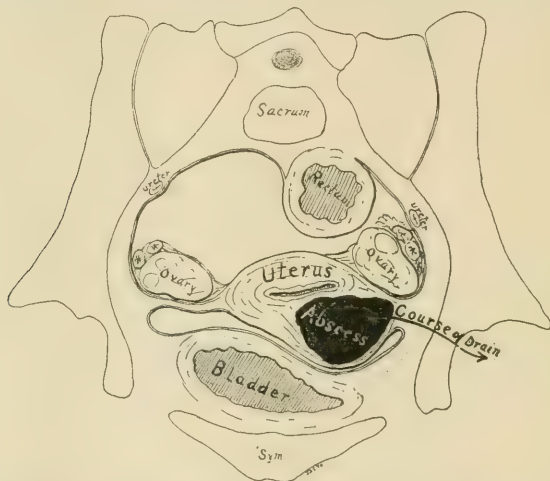


FIG. 3.—Conditions present in Case I shown in cross section,  $\times 1/3$ .

This represents a cross section through the upper portion of the symphysis and the first sacral vertebra. As indicated by the arrow, the abscess was opened and drained extraperitoneally.

into the abscess cavity and out extraperitoneally, through the lateral incision. I presume that this might have been done through the inguinal canal. The median incision was closed in layers.

Convalescence was uneventful, the median abdominal incision healed *per primam*. The drains were started on the third day and gradually removed.

Smears from the pus showed streptococci, although cultures were sterile (Bender Hygienic Laboratory).

The patient is well at the present time, but has not been pregnant since the operation.

If an operation had not been done, the abscess might have ruptured into the uterine cavity, peritoneal cavity, or the sigmoid (which was very adherent), or it might have extended between

the layers of the left broad ligament forming an abscess in this situation. The pus was sterile and the abscess might have eventually become absorbed. I believe that the patient might have recovered without an operation, but there was less danger in the operation, and that the recovery was much quicker.

CASE II.—*Intramural abscess (streptococcus) of the right uterine cornu resulting from puerperal infection following normal delivery. Abscess incised and drained transperitoneally. Recovery. Normal labor and puerperium twenty months later.*

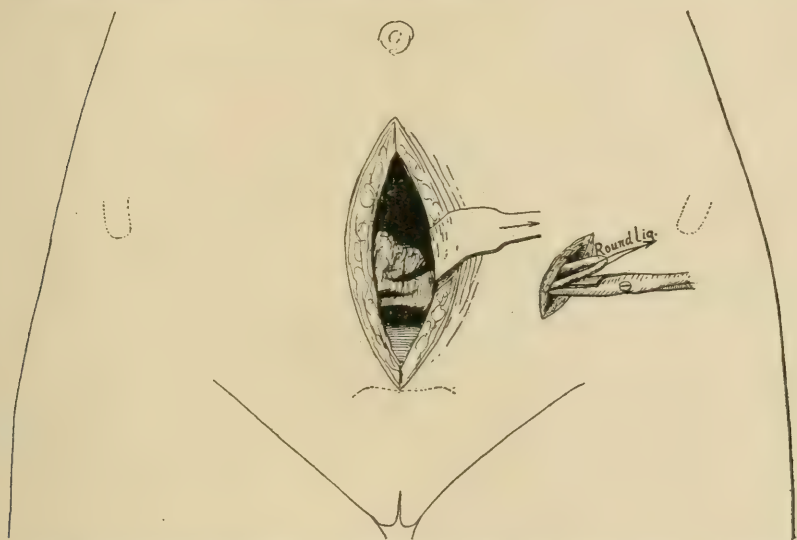


FIG. 4.—The round ligament as a means of exposing the uterine cornu. Opening the abscess extraperitoneally (Case I),  $\times 1/3$ .

After making the median incision and ascertaining the exact condition present, a lateral incision was made, as indicated, down to the peritoneum; the round ligament was grasped outside the peritoneal cavity and freed. By making traction on the round ligament, the uterine cornu was drawn up to the lateral incision where the abscess was opened by a curved clamp passed between the layers of the broad ligament, *i.e.*, extraperitoneally. (I presume this could have been done just as well through the inguinal canal.)

The patient, Mrs. J. S. (Italian), aged forty, had had seven children, the oldest fourteen years, and the youngest a week old from whose birth the puerperal infection dated.

The last labor was normal in every way, but following the labor the patient had chills and fever and was sent to the Albany Hospital. On admission, March 7, 1908, a week after confinement, the temperature was  $102^{\circ}$  and the pulse 100. The patient complained of feeling weak and of pain in the lower abdomen, more marked on the right side. Abdominal respiratory movements were absent below the umbilicus, and this portion of the

abdomen was greatly distended. The patient's bladder was catheterized and thirty-seven ounces of urine was obtained.

Pelvic examination showed an enlarged uterus, the fundus extending to a point two-thirds the way between the symphysis and umbilicus (see Fig. 5). There was tenderness on each side of the uterus, but more marked on the right. Otherwise the pelvic examination was negative. The patient was treated in the following manner: the head of the bed was elevated, an ice-bag was placed over the lower abdomen, morphine was given in small doses to control pain, and 300 c.c. of normal salt solution was given every four hours by rectum. All nourishment and water

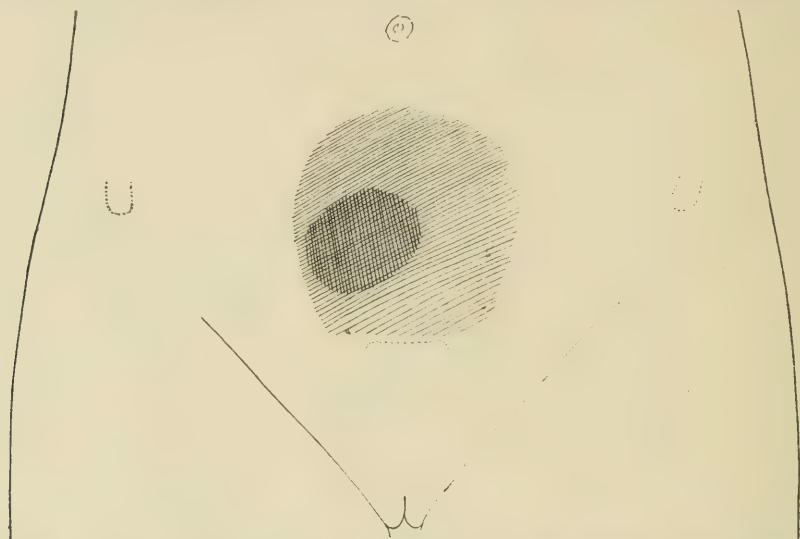


FIG. 5.—Tracing of the abdomen in Case II (intramural abscess (streptococcus) of right uterine cornu, with adherent appendix, following normal labor),  $\times 1/3$ .

The tracing was made after the operation. The larger shaded area represents the mass (enlarged puerperal uterus) which could be palpated when the patient was first seen, one week after labor. The small shaded area represents the area of tenderness and resistance which was palpated twenty-three days later and just before the operation.

by mouth were omitted for two days. The symptoms of acute infection gradually subsided, and on the fourth and fifth days after admission the patient felt comfortable and the temperature did not rise above  $99^{\circ}$ . On pelvic examination the uterus was smaller than at the time of her admission, its movements were somewhat restricted, and tenderness was quite marked on the right side. The salt solution per rectum was discontinued at the end of forty-eight hours, and liquid nourishment was begun, which was gradually increased to light diet. Hot vaginal douches, three times a day, were given. This course of treatment was carried out for two weeks. At first the patient improved, but this was only temporary. The temperature varied

from normal to  $101^{\circ}$ , pain and tenderness in the lower abdomen persisted, and during the last three or four days the patient seemed worse. On examination the uterus had become smaller, but was still enlarged. There was marked tenderness on the right side and the uterus seemed to be enlarged at this point, feeling as though it contained a myoma in this situation. On account of its similarity to the preceding case, a probable diagnosis of an uterine abscess was made.

*Operation.*—March 26, 1908. Trendelenburg position with median incision. The uterus was found enlarged as stated, and the appendix was adherent to the right cornu. A fluctuant tumor was found in the right half of the uterus, just below the cornu and presenting forward (see Figs. 6 and 7). This mass

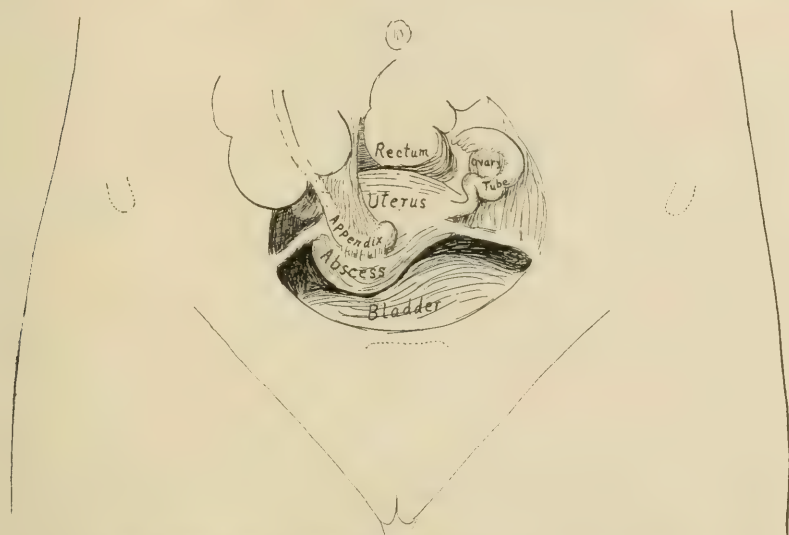


FIG. 6.—Conditions found at operation in Case II,  $\times 1/3$ .

The appendix was adherent to the right uterine cornu which contained a fluctuant tumor, a little larger than the one in Case I. The tumor presented more anteriorly than the previous one. The tubes and ovaries appeared normal and were free from adhesions.

was a little larger and more superficial than the one present in Case I. The tubes and ovaries were normal. The appendix was removed. A small incision was made opposite the middle of Poupart's ligament on the right side, the round ligament was freed and the cornu of the uterus was drawn into this incision as in the previous operation. The abscess in the uterus pointed anteriorly and not between the folds of the broad ligament, so it seemed best to carefully wall off the uterus and evacuate the abscess through the median incision. This was done. The abscess cavity was then packed with gauze drains and these were carried out extraperitoneally through the lateral incision by

incising the anterior layer of the broad ligament at its insertion into the uterus near the abscess. The median incision was closed in layers. The convalescence was accompanied by a febrile reaction (highest temperature  $102^{\circ}$ ) due to infection of the abdominal incision. The drains were started on the seventh day and gradually removed. The patient recovered.

Cultures from the uterine abscess and infected abdominal wound showed streptococci (Bender Hygienic Laboratory).

The patient later became pregnant and twenty months after the operation was delivered in the Albany Hospital. Pregnancy, labor, and the puerperium were normal in every way.

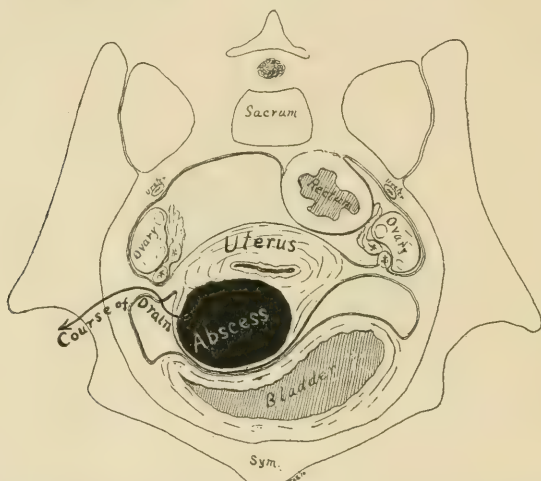


FIG. 7.—Conditions present in Case II shown in cross section,  $\times 1/3$ .

Cross section through the upper portion of the symphysis and the first sacral vertebra at a little higher level than the one shown in Fig. 3.

The abscess was opened and evacuated intraperitoneally. As indicated by the arrow, gauze drains were carried out between the layers of the broad ligament by incising its anterior layer near the abscess, and from there, extraperitoneally, out through a lateral incision in the abdominal wall, as in Case I.

In this case the dangers of rupture into the peritoneal cavity were greater than in Case I, and the chances for a spontaneous recovery were apparently less.

**CASE III.**—*Multiple abscesses of the uterus, ovaries, bladder wall and pelvic connective tissue; purulent pelvic peritonitis and thrombophlebitis (streptococcus and colon) resulting from puerperal infection following criminal abortion. Death on the twenty-third day.*

The patient, Mrs. X., age twenty-six, had been married five months and, believing herself three months pregnant, consulted a physician, who inserted a catheter into the uterine cavity in order to terminate the pregnancy. Two days later she had chilly sensations, but her temperature was not taken. I saw her the following night when her temperature was  $98^{\circ}$  and pulse 110.

There was a slight bloody discharge, but no other signs suggesting a termination of the pregnancy. The next morning the temperature rose to  $102^{\circ}$  and the pulse to 120. I then emptied the uterus of a three months' ovum, using my finger to free it and ovum forceps to remove it. The patient had a chill the following day and the temperature rose to  $103^{\circ}$ . As there was a very foul smelling uterine discharge and as I was not absolutely sure that all placental tissue had been removed, I very carefully passed a dull curette into the uterus, but found nothing; this was followed by an intrauterine douche of hot salt solution. The next two weeks the course of the illness was one of severe puer-



FIG. 8.—Sagittal section of the pelvis, Case III (purulent pelvic peritonitis, multiple abscesses of the bladder wall, uterus, ovaries, and pelvic connective tissue, thrombophlebitis of the pelvic veins (streptococcus and colon infection), following criminal abortion),  $\times 1/3$ .

The pelvic contents, removed at autopsy, were preserved in Kaiserling's fluid, and this represents the conditions found in a sagittal section of the specimen removed.

peral infection with chills, fever, and great prostration. The temperature curve was very irregular, with  $98^{\circ}$  as the lowest and  $106^{\circ}$  as the highest. The pulse varied with the temperature, from 100 to 150. Pain was present at times in the lower abdomen, but for the most of the time the patient was free from pain. The bowels moved well, but the bladder had to be catheterized. She took nourishment very poorly, at times was nauseated and would occasionally vomit small amounts, especially when the temperature was elevated. Abdominal examination was negative, except that at times there was a slight "doughy" distention, and also tenderness on palpation over its lower portion.

On pelvic examination, the uterus was found to be fixed in the posterior portion of the pelvis and marked induration was present over the entire vaginal vault. The general plan of treatment was to let the pelvis alone (the only douche given was the one previously mentioned) and to increase the patient's resistance, but the latter failed. Her inability to take nourishment seemed to be an important cause of this failure; nutrient enemata were given by rectum, but were not retained. I decided to insert a tube in a loop of the small intestine with the hope of giving nourishment through it. Under local anesthesia (cocaine) a small incision was made through the abdominal wall in the median line below the umbilicus. As far as could be ascertained, the general perit-

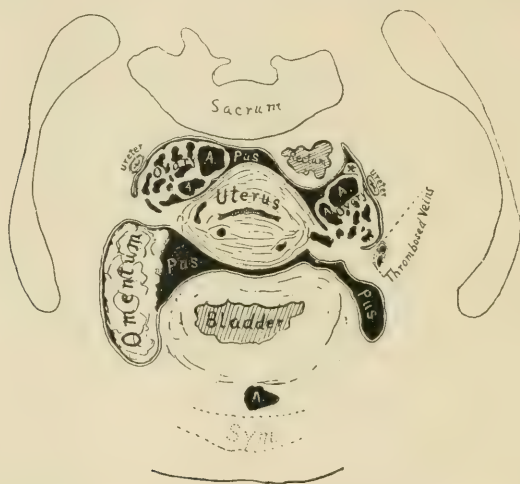


FIG. 9.—Cross section of the pelvis in Case III,  $\times 1\frac{1}{3}$ . Section was taken through the plane A-B, Fig. 8.

The ovaries were "honey-combed" with abscesses, but the tubes, except for changes caused by the purulent peritonitis about them, were normal.

oneal cavity was normal. A loop of the small intestine was brought into the wound and sutured to the peritoneum with fine catgut; a few hours later a small rubber tube was inserted in it and sutured in place. This was done with very little discomfort to the patient and without removing her from the bed. Nutrient enemata were given through this tube. In spite of this, the patient gradually lost strength and died a week later.

Autopsy showed purulent pelvic peritonitis feebly walled off from the general peritoneal cavity by the omentum and coils of small intestines, multiple abscesses of the uterus, ovaries, bladder wall, and pelvic connective tissue, and thrombophlebitis (see Figs. 8, 9, and 10). Cultures from the pelvis showed streptococci and colon bacilli (Bender Hygienic Laboratory).

I believe that an early operation in this case, by which the pelvis could have been filled with gauze and drained through

the culdesac, would probably have offered the best chance for recovery. The intrauterine douche and the use of the dull curette on the third day after emptying the uterus broke down natural barriers, spread infection, and lessened the chances for recovery.

CASE IV.—*Multiple abscesses of the uterus, right ovary, and bladder wall; encapsulated purulent peritonitis (retention abscesses) and thrombophlebitis of right ovarian veins (streptococcus) resulting from puerperal infection following manual delivery. First operation: multiple incisions and drainage. Second operation: supravaginal hysterectomy, bilateral salpingoophorectomy, ligation of right ovarian vessels at the pelvic brim. Recovery.*

The patient, Mrs. I. G. (Swiss), age twenty-six, had had five



FIG. 10.—Another cross section of the pelvis in Case III,  $\times 1/3$ , section was taken through the plane C-D, Fig. 8.

The parametrium and pelvic connective tissue contain many abscesses, some of which communicate with each other. Some of those in the bladder wall have emptied into its cavity.

children, the oldest eight years. The last one was born twelve weeks before the patient came under my care. The patient was in labor twenty-six hours and was finally delivered, by version, of a dead child. The history of the case was unsatisfactory because the patient could not speak English.

On admission to the Albany Hospital, June 21, 1909, twelve weeks after confinement, the patient complained of weakness and pain in the lower abdomen; the temperature was  $98^{\circ}$  and the pulse 90. On examination, a mass could be palpated extending upward from the pelvis and occupying the lower abdomen as high as a point two-thirds of the way to the umbilicus. The mass was more marked on the right side and extended higher up on this side (see Fig. 11). On bimanual examination, the uterus seemed to be fused with this mass and was fixed in the pelvis. The bases of the broad ligaments were indurated, but definite

accumulations of fluid could not be detected. The culdesac felt normal. I was unable to make a diagnosis other than the mass was inflammatory. The highest temperature for the first forty-eight hours the patient was in the hospital was  $100^{\circ}$ , but the day following a bimanual palpation, the temperature rose to  $103^{\circ}$  (possibly caused by the examination), and the next morning it fell to  $98^{\circ}$ , to again rise in the afternoon to  $102^{\circ}$ . The urine contained a large amount of pus; cultures were taken from this and showed a streptococcus infection (Bender Hygienic Laboratory).

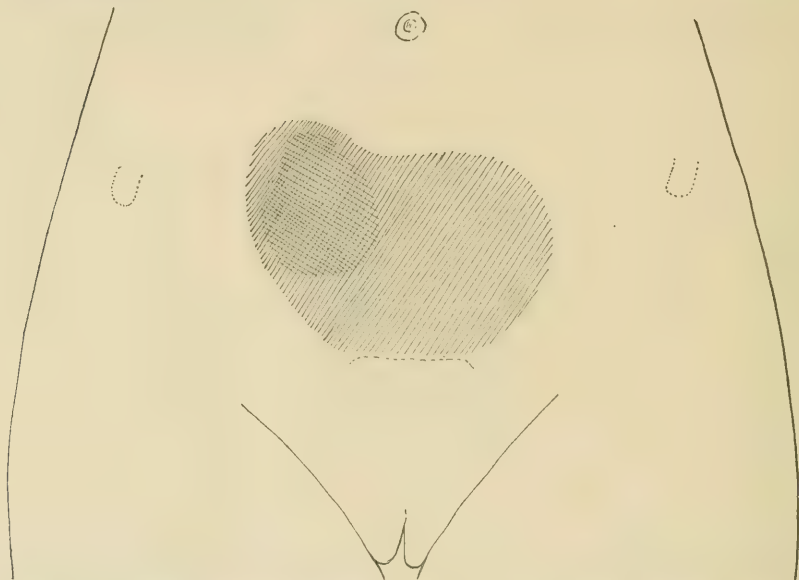


FIG. 11.—Tracing of the abdomen in Case IV (purulent pelvic peritonitis (retention abscesses), multiple abscesses of the bladder wall, uterus, right ovary, infective thrombophlebitis of right ovarian veins (streptococcus), following manual delivery),  $\times 1/3$ .

The first tracing was made before the first operation and twelve weeks after the labor. The larger shaded area indicates the indefinite mass which could be palpated then. Note that it was more marked and extends higher up on the right side than the left. The smaller shaded area represents the mass which could be palpated four weeks after the first tracing was made and just before the second operation (see Fig. 13).

*First Operation.*—June 25, 1909. Trendelenburg position, median incision. On incising the peritoneum, the omentum was found to be greatly thickened and adherent to the peritoneum of the anterior abdominal wall. On extending the incision lower down, the omentum was found adherent to the bladder wall which was drawn up over the uterus into the abdominal cavity. On freeing the omentum from the bladder, the fundus of the uterus was exposed. The uterus was walled in by the bladder in front, the omentum and intestines above, and what

seemed to be small intestine and its mesentery posteriorly; all these structures were greatly thickened and together with the fundus of the uterus, which was enlarged, formed the inflammatory mass felt on abdominal palpation. On freeing the uterus, several small accumulations of pus, encapsulated purulent peritonitis, were found between the surface of the fundus and the structures surrounding it. An oval mass, having a long diameter of 4 to 5 cm., was felt between the uterus and the bladder just above the internal os and more marked on the left side. This mass was exposed by freeing the uterus from the bladder, and an abscess was opened which apparently had communicated with the bladder, for the forefinger was inserted into the bladder



FIG. 12.—Conditions found at the first operation in Case IV shown in sagittal section,  $\times 1/3$ .

The uterus is walled in by the bladder anteriorly, the bladder and thickened omentum above, and small intestines posteriorly. Purulent pelvic peritonitis is present as retention abscesses. The tumor mass, palpated before the operation, was caused by the thickened omentum and retention abscesses. This apparently represents a later stage of the conditions found in Case III (see Fig. 8).

through the abscess (see Fig. 12). A small superficial abscess (1.5 cm. in diameter) was present in the left uterine cornu; several, at least six (exact number not recalled) smaller ones, also superficial, could be seen as small yellowish elevations over the surface of the fundus of the uterus. These abscesses were opened with a grooved director (cultures were taken from one). Several additional punctures were made into the body of the uterus with the hope of reaching other abscesses which might be situated deeper in the wall, but which were not palpated. None were found, but the uterine tissue was very friable. The tubes and ovaries were not exposed as the patient was not in good condition. Gauze drains were packed about the uterus and brought

out through the abdominal incision which was partially closed. A retention catheter was placed in the bladder through the urethra. Cultures from one of the uterine abscesses showed streptococci. The day after the operation the temperature rose to  $104^{\circ}$ , but gradually fell, and on the sixth day the highest temperature was  $100^{\circ}$ . On the eighth day the temperature rose to  $103^{\circ}$ . For the next three weeks the temperature was very irregular, ranging from subnormal to  $104^{\circ}$ . For three days during this period the temperature did not rise above normal. The patient was free from pain and did not have any chills. She felt well and would take nourishment when the temperature was low, but felt very weak and refused nourishment when the tem-

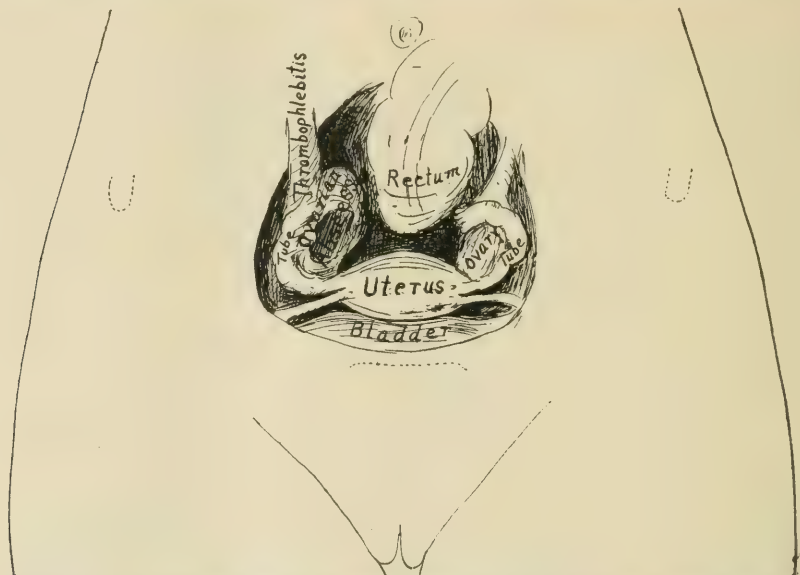


FIG. 13.—Conditions found at second operation in Case IV, four weeks after the first operation.

The pelvic organs were apparently normal except for an abscess of the right ovary and evident thickening of the right infundibulo-pelvic ligament due to infective thrombophlebitis of the right ovarian veins.

perature was elevated. The mass palpated in the lower abdomen disappeared except for a slight area of resistance to the right of the median line (see Fig. 11). The opening in the bladder closed spontaneously in ten days, the retention catheter having been removed on the eighth day. On bimanual examination the uterus could be distinctly palpated, normal in size, movements somewhat restricted with slight induration in the parametrium of each side and a small indefinite mass in the region of the right ovary. Blood cultures were taken but were negative (Bender Hygienic Laboratory). As the patient did not improve, a second operation was decided upon.

*Second Operation.*—July 26, 1909, a month after the first one; an incision was made through the previous scar. To my great surprise I found all the pelvic organs, except the right ovary, free from adhesions. The left tube, ovary, and uterus which were walled in at the previous operation appeared normal. The right ovary was surrounded by the omentum and coils of small intestines, and on freeing it an abscess was ruptured. The infundibulopelvic ligament, containing the ovarian vessels, was greatly thickened due to thrombophlebitis of the ovarian veins (see Fig. 13). As there was still some induration present about the base of the broad ligament on each side of the uterus, I thought that a hysterectomy would open up these tissues and afford better drainage. Consequently, a supravaginal hysterectomy with bilateral salpingoophorectomy and ligation of the right ovarian vessels at the pelvic brim was done. The pelvic cavity was freely drained with loose gauze through the abdominal incision. The convalescence at first was very similar to the one following the first operation, *i.e.*, an acute reaction followed by a gradual fall in the temperature which again became elevated, but after a free discharge of pus subsided. The patient recovered.

The conditions present in this case, the multiple abscesses of the uterus, bladder wall, and right ovary, the encapsulated purulent pelvic peritonitis and thrombophlebitis of right ovarian vessels, represented a later stage of the condition found in Case III and, had the former lived for a longer time, a similar picture would probably have been present.

As in Case III, the abscesses of the uterus were overshadowed by other conditions which were present. The patient might have recovered without operation, but it seems doubtful.

#### SUMMARY.

The reported authentic cases of intramural abscess of the puerperal uterus are few in number, probably not over twenty-five, and, as many of them are briefly described, one does not feel warranted in drawing definite conclusions concerning the various phases of the subject. Nevertheless a general summary is not out of place.

*Classification.*—There are two distinct groups of cases:

1. Those in which the uterine abscess or abscesses are the only results of the puerperal infection present in the case, or, if not, they are the most important ones and the principal cause of the patient's illness, as in the first two cases reported. The condition in this group exists as a distinct clinical entity.

2. Those in which the uterine condition is secondary in pathological importance to others which may result from puerperal infection. There may be multiple abscesses in the organs and structures of the pelvis including the uterus, or the abscesses in the uterus may be overshadowed by some such condition as purulent peritonitis or thrombophlebitis, as in the last two cases reported. The uterine condition in this group loses its entity on account of the greater importance of the other conditions present.

In this summary I wish to briefly consider intramural abscess of the puerperal uterus as a clinical entity, separate and distinct from the many other conditions which may result from puerperal infection, as in the first group mentioned above.

*Frequency.*—Clinical experience has taught us that the organisms present in puerperal infection may pass through the uterus, causing peritonitis, septicemia, abscesses in the tissues about the uterus or thrombophlebitis of the pelvic veins without forming abscesses in the uterine wall through which they have passed. We have concluded that an abscess in the uterine wall is very rare because it is seldom seen at operation or at autopsy. We also realize that tissues as vascular as the uterine wall would be unfavorable for their development.

While it is an unusual condition, I believe that it is of much more frequent occurrence than the reported cases would indicate, and that its apparent rarity is due to its not having been diagnosed. The patient may recover without operation, or, if an operation is done, an abscess in the parametrium, culdesac, or about the fundus, which resulted from the extension of an uterine abscess, may be opened and drained. The results of postmortem examinations do not give us a correct idea as to its frequency, because the patients do not necessarily die, and many of those who die from puerperal infection do so before sufficient time has elapsed for the development of abscesses in any of the pelvic structures.

*Etiology.*—They are one of the results of puerperal infection and the same factors would predispose toward their development as would influence the development of abscesses in other vascular tissues of the body.

*Pathological Anatomy.*—The number, size, and distribution of these abscesses resemble very closely those of uterine myomata. They may be single or multiple, small or large, situated in the cervix or in the body of the uterus, but they are apparently much more frequent in the latter and also often single or few in

number. They may be submucous, interstitial, or subserous; or may extend between the folds of the broad ligament or between the uterus and the bladder. Their frequent occurrence in or near the uterine cornua has been commented upon by Mercadé.

*History of Cases and Subjective Symptoms.*—The patient gives a history of puerperal infection following labor or abortion, which has not cleared up, *i.e.*, has become chronic. The subjective symptoms may be slight. On the other hand, the general symptoms of infection and the local ones of pelvic inflammation may be severe.

*Physical Signs.*—The general signs of infection are present which vary in severity, but may be of a low grade. The uterus feels like a myomatous uterus, but the tumor or tumors caused by an abscess or abscesses are not as definite or as hard as myomata usually are. There are often signs of pelvic inflammation about them, and of other pelvic conditions which may result from puerperal infection.

*Diagnosis.*—This is not always possible and it must be by exclusion. A probable diagnosis of this condition can be made in a patient who gives a history of chronic puerperal infection, which may be of low grade, and on examination an enlarged uterus is palpated as though containing an indefinite myoma. The diagnosis is strengthened if there is evidence of local inflammation about the tumor and it is situated in or near one of the cornua.

*Course, if Unoperated upon.*—The following possible terminations of this condition present themselves and all have clinical confirmation:

1. Rupture into the uterine cavity, one source of a profuse purulent discharge occurring during the course of puerperal infection of long duration.

2. Rupture into the peritoneal cavity, causing pelvic or general peritonitis and likely to be followed by the death of the patient, but the pus may become encapsulated, forming a pelvic abscess.

3. Extension into the retroperitoneal tissues, as between the layers of the broad ligament or between the uterus and the bladder. The future course would be that of a parametrial or broad ligament abscess.

4. Rupture into the intestines, especially the sigmoid or rectum.

5. Rupture into the bladder.

6. Rupture of a cervical abscess into the vagina.

The possibility of the pus becoming sterile and its gradual absorption must also be recognized.

*Treatment.*—While some of the cases may recover spontaneously, the condition is one which, at least in selected cases and possibly in all, should be treated by surgical interference.

As in all pelvic infections, operations are attended with less risk after the acute stage of the disease has subsided, and an exact diagnosis is also more easily made at that time. My own experience has taught me that any pelvic manipulation, such as a curettage, uterine or vaginal douche, or examinations made during the acute stage break down natural barriers and spread infection. Ergot for the above reasons is also contraindicated. After the uterus has been emptied, the pelvis should be let alone and the attention of the physician directed to increasing the resistance of the patient and improving her general condition. Operative interference during the acute stage of puerperal infection is indicated possibly for only one condition, *i.e.*, a spreading peritonitis, and I am not sure of its value in these cases. My own experience has been very discouraging.

After the acute stage has subsided, the local condition should not be disturbed as long as the patient improves. It is only when further improvement ceases and the patient begins to lose ground that an operation is indicated.

The first step in the operative treatment of chronic puerperal infection, whether or not an abscess of the uterus is suspected, is an exploratory laparotomy, unless the operator can reach the entire cause of the trouble through the vagina. I am impressed more and more each year with the value of the exploratory incision in these cases. By it one may make an exact diagnosis, and if only a vaginal puncture is indicated it may be done much more intelligently and safely when the abdomen is open. (Once in attempting to open a pelvic abscess, resulting from criminal abortion, through the vagina I felt the mass collapse; the abdomen was immediately opened, but in spite of drainage the patient died of general peritonitis.) In addition, conditions which could not be reached per vaginam may be treated. The results of puerperal infection are usually multiple rather than single, and structures which cannot be reached through the vagina are very apt to be infected.

If a uterine abscess is found, it should be opened and drained. If multiple abscesses are present, a hysterectomy may be indicated, but even in these cases multiple incisions may be made.

Noble claims that hysterectomy has been associated with a mortality of 25 per cent. in these cases, while the eleven reported cases of incision and drainage all recovered. Noble's eight cases were all treated through an abdominal incision. In three of these drains were pushed through into the vagina; one was drained through a stab wound near the abdominal incision and four through the abdominal incision.

In spite of the favorable results of the transperitoneal incision and drainage of these cases, it should be done with the least possible soiling of the peritoneal cavity. In selected cases, after the abdomen has been opened, the abscess may be drained through the uterine cavity or extraperitoneally between the layers of the broad ligament. If the abscess is situated in one of the cornua, the round ligament may be exposed through a lateral incision, freed, and used as a means of drawing the cornu into this incision so that the abscess may be opened and drained extraperitoneally.

In conclusion, I wish to emphasize that intramural abscess of the puerperal uterus occurs more frequently than the reported cases and autopsy records indicate and, for this reason, it should be borne in mind, both by pathologists and clinicians, in order that the medical profession may learn more concerning the frequency of its occurrence and its pathological and clinical significance. Its occurrence as a distinct clinical entity has already been observed a sufficient number of times to warrant a more general recognition of it as such, and it deserves greater attention in obstetrical and gynecological literature than has been accorded it in the past.

180 WASHINGTON AVENUE.

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## OPERATIVE TECHNIC IN ITS RELATION TO SHOCK.\*

BY

C. M. RAKESTRAW, M. D.,  
Savannah, Ga.

It is not always an easy matter to differentiate between shock and that condition due to hemorrhage known as collapse. Where one patient is markedly affected by the loss of a small quantity of blood, another will withstand considerable hemorrhage without serious results. In making the diagnosis a careful study of the details of the operative procedure is the only way in which a true conclusion can be reached; the nature of the

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structures handled, the time and character of the manipulation, the structures contiguous to the operative field, the nerve trunks severed or abused, the sympathetic ganglia that have been subjected to pressure, the amount of blood contained in the saturated swabs and gauze packs or that has been washed away by irrigation, the manipulation of intestines or mesentery, and the degree of intraabdominal pressure that has been relieved by the removal of tumors, are the features leading to a correct conclusion.

Dr. George H. Crile, in his exhaustive course of experiments, made the deduction that the condition of shock was due to an exhaustion of the nerve centers governing blood pressure by too frequent and too powerful stimuli.

G. H. Rogers, of Paris, in his work "Principles of Medical Pathology," says: "Nervous shock is essentially characterized, from a pathologico-physiological standpoint, by arrest or rather a diminution of nutritional activity occurring through reflex action under the influence of sudden violent excitation.

Phillippen established the fact that during shock a veritable autointoxication is produced as the results of disorders occurring in cellular nutrition. The toxic substances thus generated cannot pass from the cells into the blood and, on the other hand, toxic substances no longer pass from the blood into the cells. The most active poisons can be taken into the organism with impunity. It has been experimentally demonstrated that animals in a state of shock do not respond to strychnine or veratrine; and in clinical experience it has been established that it is in slight cases alone that alcohol causes semi-intoxication and opium induces sleep. With the above pathological picture in mind, we can readily see the futility of drugs in this condition. In other words, in the condition of shock the cells are drugged, numbed by their own by-products and they cannot absorb or utilize any medicines forced upon them.

*Etiology—Prophylaxis.*—Rogers states that: "Among the causes of shock great traumatism must be put on the first line, then violent excitations of the cutaneous nerve terminations." To this may be added the chilling of the skin by the rapid evaporation of highly volatile liquids that have been freely poured over it.

Many details of operative technic too mild within themselves to cause shock may readily be conducive to its production. Scrubbing the skin with a bristle brush is a needless source

of irritation and it can also produce slight abrasions that weep serum and afford favorable fields for the propagation of germs. A gauze swab, sterile soap, and water is all that is really necessary to cleanse the operative field. A gauze pad saturated with alcohol will answer every purpose in removing soap and fats to permit of the direct action of the bichloride on the skin, the practice of pouring an excessive amount of alcohol over the skin and allowing it to evaporate chills the surface, and the use of ether is superfluous. All solutions that come in contact with the body should be warm. And the practice of flooding a patient with cold solutions, wetting the blankets and sheets on which he is to lie during the operation cannot be condemned too strongly. The best plan is to thoroughly prepare the patient before the anesthesia is begun and bind a hot bichloride pack over the operative field until time to begin the procedure. This saves the patient at least ten or more minutes of anesthesia and it can be done with leisure and thoroughness.

During operation the patient should always be protected with dry blankets and hot-water bottles about the extremities and chest. And in operations on the chest that part not necessarily exposed should be well covered and kept warm with the bandages and hot-water bottles.

The careful protection of the patient against exposure permits of free ventilation of the operating-room, the temperature of which should not be depressing.

Postoperative backache being due to our flat tables some support should be furnished the back in its curvature. During anesthesia the patient's skeleton hangs together, as it were, by its ligaments alone, for the muscles are without tone and do not assist in holding the joints snugly in place and they drag on their ligaments. I have seen two cases in which the arms were allowed to rest over the head, and the lax muscles permitting the head of the humerus to fall down against and press the brachial plexus, a very troublesome paralysis was produced which lasted several months.

There is so much to be said about the observance of minor details in operative technic that I can but touch upon a few of the most important in this brief paper. The greatest virtue in the training and practice of local anesthesia surgery is the demand it makes upon the operator for gentleness and care in handling the tissues. It should be the dominant trait of the surgeon to be gentle to a nicety, he should psychically connect up his sensory

nervous system with that of his patient and when he handles intestines, stomach, kidney, gall structures, etc., his manipulation should be of that nicety of touch that he would employ were he feeling each touch himself. This is the true surgical science, it is scientific culture and refinement, it is the very soul of an experienced intellect. In operations on the appendix the best operators seldom touch the intestines. With two fingers in the wound their delicate sense of touch enables them to select the appendix; and in the removal of it they confine their manipulations to it, handling the gut but seldom. The old method of drawing the large gut into the wound and tracing the longitudinal striæ to the ileocecal junction has been found unnecessary in the large majority of instances, and is seldom practised by the best operators. Again, when one, ignorant of the peritoneal anatomy, mistakes for adhesions the peritoneal reduplicatures that fold over to the ascending colon from the iliac fossa to form the four cecal folds, and attempts to break up this normal support to the cecal pouch and colon, he not only produces shock, but he puts his patient in a fair way toward troublesome complications in the future.

Cold dry gauze should never be used to pack off intestines or wipe out the peritoneal cavity, because it irritates the peritoneum and invites the formation of adhesions. Gauze used in the peritoneal cavity is best wrung out in hot salt solution at the temperature of  $115^{\circ}$  F. And all such solutions should be tested with a sterile thermometer at the time of their application and under no circumstances should they be trusted to the feel as an index. Water colder than  $110^{\circ}$  F. will not stop oozing and water over  $115^{\circ}$  F. is likely to scald. In all abdominal operations the intestines should always be packed off by moist warm packs and kept concealed under their natural coverings. The proper protection of the intestines and keeping them out of the operative field is an art that requires much practice and skill. Jamming the abdomen with all the folded-up pads that can be stuffed into the wound crowds the field of operation, interferes with the work, and does harm by pressure on the sympathetic ganglia and abdominal organs. In gall-bladder operations much harm can be produced by such pressure on the solar plexus and stomach, structures very sensitive to shock. A few pads can be spread and so arranged as to cover a large area and need not be larger than eight by twelve inches, if they are held in place by proper retractors.

In the use of hemostatic forceps, it is against the first principle of surgery to grasp more tissue than is required to stop the bleeding points. These forceps bruise tissue and during the course of an ordinary operation their unnecessary use can destroy a large area of tissue. The fewer used, the less trauma produced. The stoppage of small veins and oozing is best done with hot salt solution at 115° F. tested by the thermometer. Dead cells and detritus left hanging in a wound overtax the absorptive powers of the leukocytes and render them powerless to combat infection. Even when such devitalized material is absorbed it is toxic and enhances shock. Forcible retraction also bruises tissue and invites infection. As careful as we may be, a certain amount of germs are certain to get into the wound, and we are dependent on the normal body resistance for clean healing. And as moisture and dead cells are necessary for the development of germs, a dry wound and clean is inimical to their growth. For the same reason the fewer ligatures and sutures the better, for they form foreign material to be carried off by leukocytosis. In stitching wounds the edges of the skin and muscles should be barely brought into apposition, for tight stitching bruises the edges, shuts off nutrition, and causes pain with the necessary consequences. In intestinal and stomach, gall-bladder and urinary suturing these stitches should be snug enough to prevent leakage; but even here, the main object can be readily accomplished without jamming the edges together so tightly that they will kill every cell within their grasp.

When the patient is to be removed from the table to the cart, to be carried to his room, the blankets that he has been lying in are moist from perspiration and they should be replaced by fresh, dry, warm sheets and blankets. When he is wrapped snugly in these, hot-water bottles should be placed about his extremities and chest.

*Treatment by Hydrotherapy.*—Placing the patient on a veranda in the open air while he is coming out of the anesthetic very often relieves nausea immediately and enables the patient to recover from the anesthetic in a very short time. The reinhalation of ether in a closed room and the constant smelling of its odor prolongs the nausea if present. Of course, such a patient under these circumstances must be well protected from exposure, dust, and troublesome noises. Sunlight is another agent I have used with very gratifying results when the temperature of the air will permit of its use. I have in a number of instances

relieved a patient of restlessness (so-called nervousness) by this open-air and sunlight treatment when drugs under other circumstances would have been indicated.

Immediately upon recovery of the patient from anesthesia I begin giving water by mouth in quantities sufficient to assuage thirst when a patient is not suffering nausea from peritoneal irritation. Ice and ice-water are objectionable for various reasons and I never permit their use. Cool water, cool enough to be palatable, when it does not cause painful peristalsis is preferable, but if, for any reason, it causes discomfort or pain I resort to water heated to the temperature of hot tea or coffee. Tepid water I have always found nauseating. When a patient is vomiting, water by mouth washes out the stomach, frees it of the irritating ether and decomposing mucus, and soothes the gastric mucous membrane. Some of it getting into the intestine produces a peristalsis that is gentle and drains the gastrointestinal contents toward the exit. Ileus is consequent in part on the excessive irritation of the toxic substances in the intestinal canal. Water dilutes these irritants rendering them less effective locally and preventing their absorption.

The introduction of water into the system is the most important measure in postoperative treatment and when it is absorbed by the tissues, it raises the blood-pressure, acts on the skin and kidneys, dilutes the urine, and hastens the elimination of the anesthetic and toxins. In the vomiting of peritoneal irritation water by mouth is contraindicated, for it produces painful peristalsis and, in case of infection of the peritoneum, spreads the infection and prevents localization of the process. When water is contraindicated by mouth for the above reason, we should resort to its administration per rectum. For effecting this successfully the best procedure is that advised by Murphy. An ordinary fountain containing warm saline solution at 100° F. is fixed at an elevation sufficient to cause a gentle pressure that is not uncomfortable to the patient. To the fountain is attached a tube long enough to reach the patient, but not of such a length as to permit chilling of the solution. To this is attached a nozzle that is so curved that it will fit comfortably in the rectum and be retained there. On either side of the tube next the patient's body two hot-water bottles are placed to keep the solution warm. This constant flow under gentle pressure forces the solution up into the bowel and the reverse peristalsis carries it upward into the colon where absorption is most active.

It is a serious mistake to give food too soon after operation; for if it is not readily digested, it decomposes, adding toxins to the already surcharged system. The digestive system is not, as a rule, ready for work until the bowels have moved. If hunger causes the patient very much annoyance simple broths will answer.

To prevent ileus and prepare the stomach and bowels for food, castor oil and calomel are the most used. Calomel given immediately after operation will at times relieve nausea and by its antiseptic action will stop fermentation and its consequent gases from distending the bowel. Usually a dose of a quarter of a grain is all that is required to do this. To relieve abdominal distention, the insertion of the long rectal tube or the use of hot, high enemas are of great benefit, keeping always in mind no measure is to be employed that causes severe or prolonged suffering.

The bowels cannot be moved until a certain amount of reaction has set in, and it is always best to let a patient rest during this period. The best results are at times secured by first moving the bowels with oil and enemas, and then if calomel is indicated it can be given with less discomfort.

The improved methods of suturing enable our patients to assume various postures for the relief of aching and restlessness. At times nausea can readily be relieved by placing the patient on a backrest. Any position that does not interfere with drainage nor cause pain can be assumed by a patient without harm.

*Drugs.*—From Dr. Crile's findings strychnine is decidedly harmful in shock and, when given on the operating-table, is conducive to it. If shock is due to an overstimulation nothing but harm can accrue from adding to that stimulation. At times strychnine will appear to be of benefit, but that is when the shock has passed away and the pendulum has swung from excessive irritation to an overrest, but just when this condition is present it is impossible to determine. Strychnine is not a heart stimulant, but it is a vasomotor excitant: it renders the tissues and cells more excitable. I have seen patients in shock given strychnine until they had convulsive movements without the heart being stimulated. Such patients usually die. During shock Roger tells us the cells are inactive, benumbed by their own toxins, then how can they absorb and utilize a drug injected under the skin? When such practice is employed, the drug usually lies in the tissues for dose after dose until the normal

reaction begins to take place, and then it is all absorbed at once. This proves what folly it is, how unscientific, for a drug to be ordered given at regular intervals, so much every hour, irrespective of its action or indication. Every dose of any drug, however simple, should be given according to indications and never so much every hour or two until seen again. For we can never prophesy just how much of it will be beneficial; and when we give more than enough to be of good, we are doing harm.

Phillippen established the fact that in shock there was present an autointoxication, the result of disorders occurring in cellular nutrition. This is positively the strongest argument against the use of morphine that can be advanced. We know that morphine blocks the organs of elimination—the skin, the kidneys, and the bowels. It also stops the processes of digestion encouraging gastrointestinal fermentation and interferes with leukocytosis. Now, if shock is a toxic condition, of what benefit can a drug be that stops or interferes with the elimination of toxins from the body? If the dose could be regulated to a nicety and just enough given to overcome the excessive irritation and not paralyze the eliminative functions it would be of great benefit, but as this cannot be done we must always use morphine with the greatest caution. There are times, of course, when we must use it, but experience teaches that we can often relieve pain without its use by the employment of measures that reach more directly the cause of the pain. And this is the more scientific, for morphine merely masks symptoms and never reaches the source of irritation. I have had cases that complained bitterly of pain to the nurse and on going to see them have simply sat beside the bed and with a few words of assurance relieved their anxiety, and they realized that the pain was not as severe as they imagined. Mental suggestion is a wonderful force at times in these cases and every nurse should be taught its use and value. A patient coming out of an anesthetic is undergoing a relaxation from a nervous strain that dates to a period long before the time of operation. After it is all over, the primary excitement swings back to the other extreme of depression and he needs an encouraging intellect to splint his shattered will. To receive a call over the phone from a nurse that the patient is suffering pain and then simply order morphine is against the very principles of scientific interest in a case. Morphine never fails to increase intestinal inactivity and it always prolongs the elimination of the anesthetic.

The introduction of water into the system, elevation of the feet to permit the gravitation of the blood to the head, warmth to the body and extremities, and enemas to relieve gaseous distention are the measures to be first employed. Then oxygen given by inhalation, or exposure to the open air and all measures that encourage the elimination of the toxic products in the blood and tissues is the best procedure.

Intravenous infusion is not indicated because the lowered blood-pressure is not due to hemorrhage; the vasomotor system is relaxed and the vessels flaccid. To force solutions into the blood under these circumstances is to overcrowd the circulation and flood the tissues.

Hypodermoclysis is at times of great benefit, for it forces the absorption of liquids, acts on the kidneys and skin, and washes the blood and lymph systems. A small quantity administered with a gravity apparatus is better than the use of a Davidson syringe. The tissues will take the water by gradual gentle pressure without injury, while forcing water into the tissues often bruises them and adds to the shock.

But, after all is said and done, the more we improve our operative technic the less after-treatment we will be called upon to employ: When we have been gentle and effected our purpose with the least possible traumatism, when we have used only that haste that is consistent with thorough work and kept our patients well protected against exposure, they get well by being let alone.

The points of this paper that I wish to emphasize are the following:

By completing all preparations of the operative field before an anesthetic is administered the time of anesthesia is reduced.

In preparing the patient for operation the sheets and blankets on which he is to lie during the operation should be kept perfectly dry. At the same time he should be kept warm and guarded from exposure.

Placing a patient on a veranda in the open air facilitates his recovery from the anesthetic and prevents the prolongation of nausea from the odor and reinhalation of the anesthetic.

Sunlight is a sedative and will relieve nervousness.

Change of posture will relieve backache and restlessness.

To irritate the skin with a scrubbing brush is harmful and not necessary.

Tight stitching of wounds causes pain in the wound, tissue necrosis from pressure, and invites infection.

Cold or dry gauze applied to the peritoneum causes irritation and shock. It abrades the peritoneal surfaces and invites adhesions.

Stimulation should always be supplemented by nutrition. Stimulation without nutrition disappoints the organism and tends to produce a serious reaction.

Strychnine is not indicated in shock because it adds to the condition by stimulating the already excessively irritated nerve centers.

Morphine confines the toxins in the tissues by interfering with the organs of elimination. As shock is largely a toxic condition, the relief of which is dependent on the elimination of the toxins in the organism, morphine aggravates the condition.

By giving water by mouth immediately after operation it is rapidly absorbed, or if vomited it washes the irritating substances out of the stomach and relieves the nausea. When absorbed it induces intestinal, renal, and sudoriferous excretion much more rapidly than any other agent by raising the blood-pressure in a normal way. When it cannot be taken by mouth or when such would do harm, we should resort to proctoclysis.

Forcible packing of gauze in the abdominal cavity irritates the intraabdominal structures by pressure and shocks the organism.

The practice of giving drugs regularly at intervals irrespective of indications is harmful. In shock no treatment should be given unless indicated at the moment of its administration.

An anxious patient will magnify his pain and anticipate its increase until he is on the verge of panic at times. In such a case a few words of assurance that all is well will work wonders.

Lastly, shock cannot be treated intelligently until that which caused it is understood. The treatment then consists in removing the cause.

In an article on "Diffuse Peritonitis" in the last *Annal*, Dr. Deaver says: "The use of morphine in the treatment of peritonitis cannot be too strongly condemned. Before operation it deceives both patient and surgeon and may be the cause of operative delay. It retards peristalsis, but the good effect in this respect is overcome by the increase in intestinal retention, in this manner adding another factor of toxic absorption to that which is already great enough. Moreover, opium has been

found to diminish leukocytosis and thus in another way to act against the protective forces of the body."

Dr. R. H. Harte says that "The routine dose of morphine before a patient is etherized is in time liable to lead to serious results, numerous cases being reported where this dose has been fatal."

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## THE TREATMENT OF SEPTIC ABORTION, WITH A FEW REMARKS ON THE ETHICS OF CRIMINAL ABORTION.\*

BY  
EDWARD W. PINKHAM, M. D.,  
New York.

THE occurrence of sepsis following abortion is so extremely common that a consideration of its pathological character and of its proper treatment becomes of great importance. In the brief space of time allowed me for reading this paper, it will be possible to consider the subject only in outline. The remarks upon certain ethical features of criminal abortion are added at the suggestion of our President.

Although an infection following abortion may be due to any one of a great number of pathogenic organisms, the most common are the staphylococcus and the streptococcus. The same organism may exhibit different degrees of virulence at different times and under different conditions. To me it seems that the mode of entrance into the system, together with the resistance encountered, may account for the varying degrees of severity observed in the symptoms of most of the cases. If a germ enters the system through a wound, its pathological progress will be more rapid and violent than if it were deposited on a mucous surface. People of apparently robust constitution, who have a hereditary or acquired deficiency caused by syphilitic, tubercular, or other taint, as well as those who have been weakened by disease, overwork, or excesses, have in their cellular economy less power of resistance to bacterial invasion than others in better condition and are not so well prepared to fight infection or to respond to the action of therapeutic agencies. Hence, in some cases the same organism seems very virulent, in others less so. The extent of the infected area and the duration of the process of absorp-

\* Read before the New York Obstetrical Society, December 14, 1909.

tion also have a great deal to do with the severity of the symptoms and with the outcome of treatment.

The most common organism found in cases of criminal or, more properly, of unscientifically induced abortion is the streptococcus hæmolyticus. If the organism is deposited on a mucous membrane, it produces a catarrhal condition which extends over the surface and spreads to contiguous structures. If planted in the connective tissue of the submucosa, an inflammation which is phlegmonous, more or less quickly spreading, and becoming seropurulent, fibrinopurulent, or purulent, is the result. In the exudate surrounding the focus, the cocci may be found free or partly imbedded in cells (Ziegler). If muscle becomes involved, the cocci increase rapidly and spread quickly, chiefly into the connective tissue, and are taken up by the lymphatics. The phlegmons run a rapid course, and usually lead to tissue necrosis and suppuration. The appearance of the cavity of the uterus varies with the presence or absence of placental formation, but in every case there is the phlegmon from which the infection may be spread. Usually, in septic abortions, the method of introducing the organism is by instrumentation. This means that in most cases the abortion has been induced either by the woman herself or by some professional abortionist. It may happen that the infection is deposited on the surface, but usually it is introduced under the mucosa or deeper, into the muscle, through a wound. This condition is practically the same if the wound has been made at the placental site or in the placenta itself. The infection may be carried from the original focus to the peritoneum by the lymphatics or by means of the Fallopian tubes. In some cases, especially those which occur toward the latter end of gestation, the cocci enter the blood current, producing a septic thrombosis, or the condition termed bacteremia. Nature's physiological guard, generally speaking, against the spread of infection within the body, is the lymphatic system. The lymph thrown out in the presence of the cocci, however, seems to form an excellent medium for their multiplication. The exudate around the phlegmon is made up largely of phagocytes sent to the locality to destroy the organism, a work which, to a greater or less extent, they accomplish. But microscopical examination of foci of infection thus surrounded, has demonstrated cocci, some of which have been shown to possess viability, thus proving that the phagocytes cannot always complete the work which they were sent out to perform. In all cases of sepsis,

toxins are produced by the infecting organisms, and these carried into the blood cause the most notable symptoms of the condition.

The treatment of septic abortion, it seems to me, should have a purely surgical foundation or beginning. With that idea in view, the first thing to do is to remove, as far as possible, the focus or foci of infection. When the pregnancy is far enough advanced for placental formation, the dull curette may be of service in removing the secundines. But lying deeper is the phlegmon with its active cocci, which still remains the focus. The dull curette will make no impression on this, only the sharp curette can perform the necessary service. Great care must be used, of course, to avoid perforation or too much mutilation of the musculature. One of the strongest objections brought forward to the use of the sharp curette is that it removes nature's barrier to the spreading of the infection. This I believe to be a fallacy, for the pathological reasons which have been stated. The question of Goffe, "If nature walls off the uterus, why do patients die?" is very pertinent. It is customary to speak of emptying the uterus in these cases. Of course it is proper to do this when there are retained secundines, but even then the removal of the more deeply seated focus is as necessary as before the placenta is formed.

I have seen on autopsy the lining of the uterine cavity a mass of necrotic tissue in cases where either the dull curette had been used or no curetting done, the cavity having been packed with gauze or irrigated. In these cases—three in number—a laparotomy had been performed with both posterior and abdominal drainage. What chance have the vital forces of the patient in a contest with these nests of constantly multiplying bacteria?

If the work in the uterine cavity had been more thoroughly done in the first place, there might have been more chance of saving the patient's life by the major operation that was resorted to.

Applications to the uterine cavity, after curettage, of the various antiseptics, iodine, iodoform, carbolic acid, etc., may perhaps be of benefit. Gordon (*Brit. Med. Journ.*, April, 1908), strongly recommends the application and subsequent employment of undiluted Izal following the use of the sharp curette in puerperal sepsis. The intrauterine douche, so commonly employed, is strongly condemned by Gordon and other writers as of no value, and possibly in some cases harmful.

Drainage is, of course, positively indicated. Packing the

uterus and pelvic cavity does not always give satisfactory drainage. The gauze soon becomes clogged and is a menace instead of an aid. Most surgeons favor the cigarette or gutta-percha drain, while some adhere to the tube, glass, or rubber. The upright, or Fowler, position, greatly aids in carrying off the discharges. If a laparotomy is done, it may be necessary, in addition to the drainage of the pelvic cavity, to remove the adnexa or even the uterus. It is my belief that every case of septic abortion, whether there are signs of peritonitis or not, should have a posterior section and insertion of a drain, for there is no way of determining beforehand, the extent or severity of the infection. Goffe, Vineberg, Lantas, and others, may be referred to as supporting the surgical principles thus far outlined, with perhaps the exception of the last.

Scarcely second in importance to the surgical procedures which have been mentioned, are those measures of treatment which have for their object the neutralization or destruction of the poisons which have become absorbed into the blood. Of these measures, I mention first the use of the so-called salt solution by hypodermoclysis, intravenous transfusion, or by seepage into the rectum. In whatever way this remedy acts, whether by diluting the toxins and thus rendering them less harmful, or by increasing the volume of blood—in this helping the action of the heart and promoting elimination—its worth has been proved in many cases and is generally recognized by the profession. Prompt and frequent administration of the remedy is to be recommended in all serious cases.

For antagonizing the germs and their toxins directly, various specific remedies have been proposed. Some of these have had their enthusiastic supporters for a while, only to be discarded at last because they did not prove to be the expected panaceas. That they have been of service and are still valuable is attested by many competent observers. Perhaps the most familiar treatment of this kind is that by the sera and the preparations of dead bacteria called bacterins or vaccines. I have had some experience with these agents, but so far the result has been negative. The failure may have been due to some fault in the technic of administration, or to a lack of persistence in the use of the remedies. With further and more careful trial, a different showing may be made. Nozzi (Italy), Mayer, Müller, Atonson, and Henkel write in favor of these methods of treatment. Von Miculicz proposed an artificial leukocytosis,

produced by the use of nucleogen. The best results with all these remedies have been obtained in early cases. Henkel and Müller claim that these antidotes are efficacious only as prophylactics or in early cases. French writers, especially, advocate the use of colloidal silver, collargol. Herring reports excellent results, and advises intravenous injections in doses of from five to fifty centigrammes. Doyen, Le Calvé, Maroken, and others speak favorably of the remedy thus administered, but say they have had the best results in early cases. Brindreau, in *Bull. Soc. d'Obstet. de Paris*, 1908, advocates the use of Metchnikoff's preparation of lactic acid bacilli, introduced into the cavity of the uterus, on the theory of the natural antagonism of that bacillus for the streptococcus.

More important, perhaps, than anything which has so far been mentioned is that line of treatment which may be called supportive. We must not lose sight of the fact that in all successful cases the real cure is wrought by nature herself, and that whatever we may do is only an aid to her efforts. When attacked in her citadel by her foes, the death-bearing microbes of infection, she sends out her armies of protection, the phagocytes, to destroy the germs, and, to neutralize the toxins that they produce, she manufactures an antitoxin which, being autogenous, is always more or less effective. In scores of mild cases, and even in some which are severe, she is equal to the task of cure and does her beneficent work without recognition; only in the more severe cases or those in which she is handicapped by the existence of other maladies or unusual weaknesses does she require our aid. In giving our aid, this natural power of resistance to disease, the *vis medicatrix naturæ* of the older writers, should be kept constantly in view.

Most important is nutrition, the persistent administration of food which requires little digestive effort on the part of the stomach, such as the freshly expressed juice of beef, the animal broths, peptonized milk, etc. Among the foods, also, must be reckoned alcohol, which experience has taught the profession to regard as one of the most satisfactory agents that can be employed in sepsis. Besides acting as a food, it is thought to promote the migration of phagocytes, and to stimulate all the defensive forces of the system to greater activity. Possibly it may act also as a bactericide. Whisky, which is the cheapest and most easily obtained form of alcohol, is generally employed, but it seems to me that absolute alcohol is

better, on account of its tastelessness, the ease with which it can be disguised, and the greater precision possible in its dosage. While alcohol is of great value, there is a limit to the amount which can be taken to advantage. Overdoses of this, as with other remedies, may do harm. In most cases a drachm of absolute alcohol, equivalent to two drachms of whisky, once in two to four hours, would be as much as the patient should take. Among other supporting remedies strychnine or, better still, the tincture of *nux vomica* in small and frequently repeated doses (five minims every two hours or so), and quinine are to be mentioned with approval.

The principles of treatment which I have thus outlined may be summed up as follows:

1. To remove the foci of infection, so far as they can be reached; and
2. To establish adequate drainage. In this connection, the use of the sharp curette and the avoidance of packing are points to be emphasized.
3. To neutralize the effects of the toxins produced by the infecting organisms, and to destroy those organisms that have escaped into the blood or are planted in the tissues beyond the reach of surgical measures of treatment: Salt solution, anti-toxin, bacterin, colloidal silver, etc.
4. To sustain the vital forces of the system and aid nature in her work of defense by proper nutrition and supporting remedies.

#### ETHICAL CONSIDERATIONS.

In view of the fact that nearly all cases of septic abortion are also cases of criminal abortion, a brief discussion of some of the ethical principles involved in the subject may not be considered out of place at this time.

It is under the stress of such a condition as sepsis following abortion that the physician can impress upon the mind of his patient the great danger attending a forcible interruption of pregnancy and the moral turpitude of the act. If the woman lives after such an ordeal, the attempt will probably be her last. But the great majority of women are never on the verge of dissolution from such a cause, and all those that come under our influence we should teach by all the means in our power what it means to violate the sacred laws of our being in so flagrant a manner. There are many women who do not know the great

seriousness of this offense. They believe that up to a certain stage in its development the fetus has no standing as a human being, and that they have a perfect right to destroy it if they choose. They see the apathy toward induced abortion on the part of their neighbors, physicians, and the world at large, and are led to think lightly of the offense. If told that causing a miscarriage intentionally, even by such means as the use of herb teas, cathartics, or violent exertion with that purpose in view, is a violation of the law, to be punished on conviction by confinement in the state prison, they would pay little heed to the declaration, for they know that the law is seldom enforced—never, it may be said, when a woman herself commits the crime. Many women are ignorant of the morbidity almost sure to follow an induced abortion, and they do not realize the tremendous danger of mortal infection, nor the liability to sterility or habit abortion, if they survive. All these facts and considerations should be constantly held up before the woman by her physician, for, possessing such knowledge, a certain percentage of women would unquestionably hesitate, especially in the face of possible death, prolonged invalidism, sterility, or habit abortion.

These remarks apply chiefly to married women. With the unmarried woman, the situation is different. The sense of personal disgrace which she feels, and the worry which comes from fear that her wrong-doing may become known, tell strongly against any attempt to convince her that the better way is to bear her disgrace and give birth to the child. If public opinion were not so unreasonably harsh and so unjust toward those unfortunate women who become mothers outside of the pale of matrimony, the cases of criminal abortion in the community would be materially lessened. As a class, these unmarried mothers are not so bad as they seem. Morally, they are far superior to those women of society who, while holding their proud heads high, and associating with the elite, either murder their children before they are born or neglect them shamefully afterward.

There are two other points in the ethical consideration of this subject which seem to me to be important: The first is the necessity or advisability of publicity in the management in cases of criminal abortion. For his own protection, the physician should refuse to keep anything secret. If he cannot take the case to a public hospital, where everything must become known, he should

associate with himself some other reputable physician, or refuse to have anything to do with the case. It might be advisable even to report the facts of the case to the prosecuting authorities of the town or city. This would give him complete protection. Good legal authority has declared that if the physician does not do this, but maintains secrecy in the treatment, he becomes *particeps criminis*, and subjects himself to a possible prosecution. In many cases there are strong motives for maintaining secrecy, either for the purpose of shielding the woman from disgrace or for protecting a fellow-practitioner, whether he be the family physician or some abortionist. It is to be assumed that every educated and skillful physician is proof against any temptation to commit the crime we are considering.

The famous dress suit case which happened in Boston a few years ago illustrates the risks which a physician runs who attempts to treat one of these criminal abortion cases secretly. A young doctor was called at night by a colleague and friend to operate on a girl who was suffering from septic infection following an abortion, which had been, as was afterward proved, induced in one of the notorious abortionist dens of the city. After demurring for a while, he consented to operate and to keep the whole affair a secret. A few days later, the dismembered body of this young girl was found in the waters of Boston Harbor, packed in two dress suit cases. The doctor and his associate were arrested with others, and tried as accomplices in the crime. While the principals were convicted, he and his confrère were acquitted, but the stigma was so great that both these doctors were dropped from the Massachusetts Medical Society. One of them soon died, while the other left the city. Assuming that these young doctors were innocent of wrong intent, the course which they pursued was extremely injudicious, to say the least.

The second point that I would make, is the importance of extreme care in making the diagnosis of criminal abortion, especially if the reputation of any other person is involved. Although the symptoms and the ascertained facts of the case may point to criminal abortion, it might be possible to make a serious mistake, as was done in 1892 in the well-known case of Dr. Reid, who suffered untold mortification following the hasty assumption on the part of an interne at Bellevue Hospital. Dr. Reid was exonerated and commended, but every man might not be so successful in refuting a careless statement.

THE TREATMENT OF INEVITABLE AND  
INCOMPLETE ABORTION.\*

BY

WILLIAM P. POOL, A. M., M. D.,

Brooklyn, N. Y.

It is of importance in undertaking the treatment of abortion to learn first whether it be threatened and possibly preventable, or inevitable, or incomplete. In the early months the symptoms of these conditions are sometimes so nearly identical that accurate differential diagnosis is difficult.

The one constant sign is hemorrhage. Pain, cervical dilatation, appearance of the separated ovum at the outlet, or extrusion of part of the uterine contents are signs not always in evidence. Hemorrhage, even though profuse, cannot be depended upon as pathognomonic of inevitable abortion, for bleeding may occur from time to time throughout pregnancy without interfering with it. However, its long continuance must be regarded as significant and may demand emptying the uterus even when development of the ovum has not ceased. Pain is a variable symptom and may be due to other causes. A patulous os usually means the loss of the ovum, but such has been known to contract and pregnancy has gone on without event. The expulsion of part of the uterine contents is practically a certain sign of abortion, yet Charpentier and Playfair have reported cases in which particles of decidua were expelled without interrupting pregnancy. When the ovum can be felt through a partially dilated cervix, evidence of abortion is almost conclusive. But if, in the presence of one or more of these signs, there still be a doubt of the possibility of saving the pregnancy, valuable information may be had from bimanual examination of the uterus. This, if its contents be still intact and *in situ*, gives to the touch a sense of resiliency which is peculiar to the pregnant state, and which is better appreciated by experience than description. If the ovum be dislodged or broken up the uterus is found to be doughy, or intermittently contracting, or in tetanic spasm.

When it is certain that abortion is progressive and inevitable there are two indications to be met: 1. Emptying the uterus by the means of least danger and traumatism to the patient. 2. The restoration of the pelvic organs to their normal condition.

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The dangers to be avoided are chiefly hemorrhage, infection, and subinvolution and subsequent displacement of the uterus.

Upon these facts all are agreed, but there is a difference of opinion as to the methods best calculated to attain the desired results. Whether it is better to follow an expectant plan in the hope that spontaneous evacuation will occur, or to institute radical treatment at once and remove the uterine contents by operation, is still a disputed question. Peterson refers to what he calls the normal mechanism of abortion, consisting in the complete expulsion of the ovum after a short labor, and argues that as it is the generally accepted rule in labor at term that no operation to hasten delivery is permissible except in the presence of certain well-defined indications, so in normal spontaneous abortion there is no reason why the same rule should not apply. That all obstetric operations, whether at term or before, increase the morbidity and mortality of the puerperium. Other writers, Lusk, Winckle, and Boldt concur in this opinion, and would delay any surgical interference until some indication, such as hemorrhage or infection compels it, believing that as a general principle these cases do better when left to nature; that those who have not been subjected to a forcible removal of the uterine contents are in the end in just as good health as those who have undergone operation; that retention of the decidua has little or no influence upon convalescence; that endometritis, chronic congestion, and displacement are not more frequent sequelæ; and that subsequent functions, menstruation and child-bearing are not more likely to be interfered with. Their position is further supported by pointing to the possible dangers of intra-uterine instrumentation or manipulation.

On the other hand, it is held that when abortion cannot be prevented the patient is in constant danger from hemorrhage and sepsis so long as the products of conception remain in the uterus, and that on this account alone immediate intervention should be practiced. Further, it is believed that involution is more prompt and complete if a thorough emptying of the uterus of the ovum and *all the decidua* be accomplished at once; that menstrual disturbances and chronic lesions of the uterus and adnexa are less liable; that following sterility is not so frequent, and the risk of abortion in a subsequent pregnancy not so great. After contrasting the results of active and expectant treatment in a series of 242 cases, Edgar has stated the belief that early curettage is less dangerous than abortion and its sequelæ, and

that hemorrhage and liability to infection are much less in the former than in the latter. Garrigues has said: "If left to itself, or improperly treated, abortion is a dangerous accident which often ends fatally, usually from the occurrence of hemorrhage or septicemia. More women die from abortion than from childbirth, even if the bungling operations of professional abortionists be not considered." Dührsen and Fehling also have advocated immediate intervention.

Can abortion ever be regarded as a normal act? Can the rules which obtain in the evacuation of the uterus at term be equally applied to it in the early months? An examination of the conditions in these two periods must be convincing of the imperfect provision made by nature for casting off the uterine contents in early pregnancy, even if repeated experiences have not demonstrated the fact. The softer consistence and greater fragility of the ovum, the greater adhesion of the decidua, the comparative hardness of the cervix, and the deficiency in contractile power of the uterus, all predispose to imperfect abortion and the retention of a part at least of the ovum or its envelopes for an indefinite period. While it is true that nature is competent in many instances of spontaneous abortion to complete the act without intervention and without serious danger; yet in no case can such a result be confidently expected..

In the first month of pregnancy abortion often occurs without being brought to medical attention, and may even escape the knowledge of the patient. A missed period which is followed later by a more profuse flow with little or no pain is frequently regarded as a delayed menstruation and ascribed to some other cause. Many such cases recover promptly and without complication, as, owing to the small size of the ovum and the slight changes in the uterus, hemorrhage is not great and involution takes place readily. The only treatment usually required in these very early cases is rest for a few days, and no more radical measures need be employed unless bleeding be persistent. This exceptionally may continue as a result of chronic hyperemia and fungous overgrowth of the endometrium, when thorough dilatation and curettage is indicated.

From this time forward the symptoms are more pronounced and the dangers greater. Although hemorrhage is rarely severe enough in the first three months to be a menace to life, still it is not infrequently so profuse at the outset as to cause faintness and loss of consciousness, and until the uterus is emptied, it is a

constant danger. So long as the detached or loosened ovum remains in the uterus infection constantly threatens. There is no question but that fever, rise in pulse rate, pelvic pain and tenderness, which symptoms mean that infection has begun, are indications demanding interference. Why is it not reasonable to anticipate these conditions, and, by resorting to early intervention, remove their cause, rather than to accept the risks of operation at a later time when the patient may already be depleted by hemorrhage or the field invaded by infection? There are certain contraindications to immediate active treatment. The spontaneous expulsion of the ovum entire, together with the decidua, followed by cessation of hemorrhage and prompt retraction of the uterus, show that abortion is already complete and no local treatment is necessary. A careful examination of all clots and expelled particles should be made when possible, to determine if this be the case. Also, when abortion is inevitable but the cervix still remains so hard and undilated that it will not permit the easy passage of a well-developed fetus, it is best to wait, in the absence of signs of sepsis or alarming hemorrhage, till softening and relaxation of the cervix can be brought about. This is materially aided, and at the same time hemorrhage is temporarily controlled by a firm cervical and vaginal tampon. A narrow strip of moist sterile gauze is introduced into the cervix and the canal packed solidly. A wider strip of the same material is then carried into the vagina and placed round and round the cervix until the cavity is filled. The pressure and irritation of these tampons stimulate uterine contractions, help to soften and dilate the cervix, and make subsequent removal of the uterine contents quicker and easier. The gauze should be removed in from twelve to twenty-four hours, during which time the patient should be under intelligent observation lest bleeding continue, in which case further delay is not justifiable. If after twenty-four hours the cervix be still insufficiently dilated it is usually not wise to wait longer, as spontaneous progress is likely to be very slow or lacking.

Absolute rest and other measures which may have been employed in the hope of preventing abortion are no longer necessary. Drugs which have been given to lessen sensibility and allay contractions are now harmful and serve only to delay. In their place, if medication be used at all, should be given something to stimulate muscular action, *e.g.*, ergot and strychnia. The lower bowel should be thoroughly cleared, and rectal irri-

gation with normal salt solution at a temperature of 120° has proved a good uterine stimulant.

When the cervix has well dilated and the ovum has been partly expelled or presents to the examining finger in the lower part of the uterus, with or without serious hemorrhage or signs of sepsis, the best procedure is curettage. Removal of the ovum with the finger or with a forceps may be accomplished, but it is not a sure method of emptying the uterus of all its contents. The forceps will almost certainly leave something behind, and the gloved finger (the only sort that should be introduced into the uterus), while it is an excellent palpator, is a poor curette. Scraping the interior of the uterus with the bare finger nail is an unclean and unsurgical procedure and cannot be too strongly condemned. As the decidua vera separates from above downward, the curette is the only instrument that can properly insure its complete removal, but in conjunction with the curette the finger may be used to explore the uterine cavity for remaining particles of placenta or decidua. This examination is facilitated by forcing the uterus downward by suprapubic pressure so that the whole cavity may be reached.

It is best to make a thorough preparation, and to approach this operation with all the care that should be used in any surgical case. An anesthetic is desirable, as with improper equipment and a resisting patient, it is often impossible to be sure that the work is done completely. A large-size sharp curette is best in the majority of cases, though it is an instrument to be used with much care, and is contraindicated in some conditions. It should not be used when there is any suspicion of infection, particularly if this be of the streptococcic variety, as tearing away the endometrium and opening the way for lymphatic involvement in the deeper structures may do much more harm than leaving behind a part of the adherent decidua. In induced abortions, where septic organisms may have been carried into the uterus by unskilled instrumentation, this possibility should be especially borne in mind, and in such cases a dull curette is the safer instrument. A gauze sponge on a Keith forceps serves well to detach fragments in some cases and is a safe instrument in the presence of active sepsis. Curettage may be followed by a douche of hot sterile salt solution, though this is not usually necessary. It helps to check hemorrhage if this be persistent, but is contraindicated if there be infection. Antiseptics are of doubtful value in the uterine cavity,

and may be positively harmful. A uterine pack is not used except to control hemorrhage, as it is more likely to interfere with, than promote drainage. It does serve one purpose: that of carrying with it, upon its removal, small particles which have escaped the curette and the finger. However, these are usually cast off in the lochia without trouble.

Abortion is said to be incomplete when any portion of the ovum or decidua remains within the uterus. It may be incomplete from the start as when there is a sudden loss of amniotic fluid with or without the fetus, or it may become incomplete by the expulsion of a part of the uterine contents during contractions. The symptoms at the outset often do not differ materially from those of inevitable abortion, but there are certain characteristics by which it may usually be recognized. Fragments of the ovum may be discovered in the vagina during examination; hemorrhage is continuous; the uterus is boggy and the cervix patulous; the discharge becomes putrid and offensive. Long-continued bleeding after a supposed complete abortion should always lead to the suspicion that the uterus is not entirely empty.

When a part of the ovum is lost the uterus has not the same power of casting off the remainder that it has of expelling the ovum intact. Its contractions are less vigorous, it is depleted by hemorrhage, and may be further weakened by septic invasion. Exceptionally the uterus may retain a part of its contents for a long period without ill effects. The writer has seen one case in which a three months' placenta remained in the uterus for four months after a supposed complete abortion. There was no abnormal sign during this time but amenorrhea. More frequently, however, an incomplete abortion that begins as a clean case will develop septic symptoms unless treatment is instituted promptly. Owing to the inability of nature to take care of herself under such conditions, early active treatment is demanded in all cases of incomplete abortion. Drugs or tamponing the cervix and vagina are of no avail, and the only means of anticipating and avoiding the dangers of this state and its far-reaching sequelæ are by the immediate removal of the remains from the uterus. Imperfect dilatation should not now be regarded as a contraindication to operating at once, as in the presence of a macerated ovum, valuable time may be lost while attempting to bring about natural softening and relaxation of the cervix. Here, too, preparation should be made with complete

surgical care, and an anesthetic administered. If the cervix will admit the finger, it is well to palpate the uterine cavity first, to determine how much material it contains and upon what part of the wall it is adherent. Such knowledge is a valuable guide in using the forceps and curette. If the mass be considerable a Keith or placenta forceps is introduced to the point of its location and as much as possible is grasped and withdrawn. Repeated attempts of this kind will sometimes remove practically all the uterine contents with the slightest possible traumatism, but it is always best to go over the ground again with a large dull curette, and search for remaining particles, carefully avoiding all unnecessary injury to the endometrium. This is followed by cleansing with a dry sponge, and, as a rule, no drain is placed in the uterus. The cervix may not admit the finger or may be too tightly contracted to allow the passage of even a large-size curette, and it is then necessary to dilate slowly with a steel branched dilator. If still the finger cannot be introduced, evacuation must be accomplished without its aid.

When the uterus is clean, hemorrhage controlled, and the immediate danger of sepsis is past, there still remain certain considerations, both general and local, that should not escape attention. It cannot be doubted that many cases have passed into a state of chronic semi-invalidism as a result of neglect in the after-treatment, as well as from neglect and unwise delay before operation. That many of the ills that beset convalescence from this accident are preventable is amply demonstrated, and treatment should not cease until the patient has been restored as nearly as may be to her normal state. In the first place, her present condition must be looked to. If there have been profuse or long-continued hemorrhage to which is added the bleeding necessarily attendant upon operation, she may be found in a state of acute anemia and require immediate support and stimulation. This is best supplied by the infusion of normal salt solution by hypodermoclysis or enteroclysis. As much as a pint may be slowly injected into the loose connective tissue under each breast. An excellent rectal injection at the end of operation is half a pint each of salt solution and strong coffee, to which may be added an ounce of whisky. The long-continued rectal injection of salt solution after the method of Murphy has proved a good supporting measure. Ergot, adrenalin, and digitalis may be given hypodermically.

Involution after abortion is often a longer process than that

following labor at term, and there is a greater tendency to displacement, congestion, and chronic inflammatory change of both the uterus and the adnexa. This is no doubt due in part to the fact that patients are allowed to get up too soon. Rest in bed from ten days to two weeks should be prescribed, and during this time periodic examinations should be made to determine the size and position of the uterus. A tendency to retroversion or retroflexion may be overcome by keeping the patient off her back, and having her assume the knee-chest posture for a few minutes several times a day. If the malposition persist at the end of a week more active measures will be required. With the patient in the knee-chest posture, the uterus is repositioned and fixed in its normal position by tamponade or, better, when the structures permit, it may be supported by a suitable pessary. This is the time for correction, while the uterine supports are still relaxed, and this simple maneuver hastens recovery and prevents many succeeding ills, and possibly a future operation. Vaginal douches during the first week are not advisable, just as they are not advisable in the first part of the puerperium. But after this time a douche at a temperature of 120° given slowly, with the patient in the recumbent position, and repeated two or three times daily is an aid to involution.

If, after the patient is up, she complains of backache, pelvic tenesmus, or leucorrhœal discharge, and examination show that the uterus is still large and soft and tender, or the parametrial structures thickened and sensitive, treatment by vaginal tampons should be carried on for a time until involution has improved and the uterine supports have regained their tonicity. The real value of such astringents and counterirritants as are commonly used may be questioned, but proper tamponade is a decided benefit at times when, owing to chronic inflammation and irritability of the pelvic organs, a pessary cannot be worn. Erosions about the os externum and in the lower cervical canal are well treated by applications of nitrate of silver or iodine.

In a healthy woman whose uterus is in its correct position and who is free from adnexal disease, such measures should be efficient to restore the pelvis to its normal condition.

THE LEGAL STATUS OF CRIMINAL ABORTION,\*  
WITH ESPECIAL REFERENCE TO THE DUTY AND PROTECTION  
OF THE CONSULTANT.

BY  
ALMUTH C. VANDIVER,  
Counsel to the Medical Society of the County of New York.

ABORTION is defined in the Penal Law of the State of New York as follows:

"A person who, with intent thereby to produce the miscarriage of a woman, unless the same is necessary to preserve the life of the woman or of the child with which she is pregnant, either

1. Prescribes, supplies, or administers to a woman whether pregnant or not or advises or causes a woman to take any medicine, drug, or substance; or

2. Uses or causes to be used any instrument or other means, is guilty of abortion, and is punishable by imprisonment in a State prison for not more than four years or in a county jail for not more than one year."

Section 80, Penal Law.

This definition has been upon our statute books twenty-eight years (L. 1881, Ch. 676). It is a crime known in law as *malum prohibitum* as distinguished from *malum in se*. Modern text-writers generally, agree that at the common law, that is to say, by prevailing custom in England prior to the inception of written law, it was not a crime to cause the destruction of an unborn child before it had quickened in the mother's womb, provided the mother consented to the act.

The crime, as it is known to-day, is a felony.

It is so for the reason that it may be punished by imprisonment in a State prison. (Sections 2, 80, Penal Law.)

That a consideration of this statute may be perfectly clear to the minds of you gentlemen of the medical profession, permit me to say that in law, miscarriage, narrowly, is construed to mean the expulsion of the ovum or embryo before it is perfectly formed and capable of living. Pregnancy is in medical jurisprudence the condition of a woman who has within her the product of a conception which has occurred within a year. (Billing's Nat. Med. Dict.; Bouvier's Law Dict., p. 725, Vol. ii.

None of the prohibited acts referred to in the section under

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consideration are criminal if there is necessity to do the prohibited acts in order to save the life of the woman "or of the child with which she is pregnant."

It would seem that the last phrase is entirely superfluous and unalterably inconsistent with the definition of miscarriage—namely, "the expulsion of the ovum or embryo before it is perfectly formed and capable of living." That, however, is the law.

The burden of proving by direct or circumstantial evidence bearing upon the subject that the doing of any of the prohibited acts is necessary to save the life of the woman or child rests upon the accused. (*Bradford v. People*, 20 Hun., 309.)

Therefore it would seem that, the life-saving necessity being absent, any person who, with the intent to produce the premature expulsion of the embryo or fetus, prescribes, supplies, or administers any medicine, drug, or substance to a woman—whether she be pregnant or not—is guilty of abortion. Yet, is this so?

In the statute it is also provided that any person, the life-saving necessity being absent, who, with intent to procure miscarriage, "advises or causes a woman to take any drug or substance" is guilty of abortion.

This part of the law has been judicially passed upon by the Court of Appeals of this State (*People v. Phelps*, 133 N. Y., 267) 1892.

Justice Gray, writing the opinion of the Court, stated:

"While it would be perfectly competent for the legislature to impose a punishment for the mere giving of advice to a woman to take a medicine to procure an abortion irrespective of its being acted upon, I do not think that we are warranted in saying that that was their intention here. For a man to be "guilty of abortion" within the provisions of this chapter, who has advised the woman to take a drug, it is necessarily and logically to be implied that his advice should have been followed by the act. Otherwise we would have to draw the apparently absurd conclusion that the legislature intended that abortion could be committed or caused by the act of offering advice. . . . Assuming that the defendant gave the advice of which accused, it does not appear that the woman took it, and therefore the fact was wanting to constitute an element of the crime charged."

If the ordinary definition of prescribe, namely "to give medical directions, designate the remedies to be used" (*Cent. Dict.*, p. 4701), which surely is but written or spoken advice, and the

prescription be not followed by the woman, it would seem that this provision, namely, as to "prescribing," comes also within the scope of Judge Gray's decision. So, apparently, would be the "supplying" abortion drugs if the woman did not take the same, yet, the selling or the possession with intent to sell of abortion drugs is a misdemeanor. (Section 1142, Penal Law.)

Abortion, under subdivision 1, therefore, would seem to be only

The prescription or the supply—or the administering—or the advice followed by acceptance of the prescription or the supply or the administration or the advice and the taking of the drug or medicine so prescribed, supplied, administered or advised, the intent to produce a miscarriage being present, the necessity for life-saving being absent.

Observation that the law is in great need of amendment is hardly necessary at this juncture. The need, in the opinion of the writer, will become more apparent by consideration of subdivision 2:

"Uses or causes to be used any instrument or other means."

The section, in full, reads:

"A person who, with intent thereby to produce the miscarriage of a woman, unless the same is necessary to preserve the life of the woman or of the child with which she is pregnant (omitting Sub. 1) uses or causes to be used any instrument or other means."

There is no statement here that the woman need not be pregnant. In fact, reading the exception, the language is "unless the same is necessary to preserve the life of the woman or of the child with which she is pregnant."

Nor is there any phrase in regard to the use of the instruments "upon the body of the woman."

The subdivision became a law in 1881, superseding the amendment of 1880 (Ch. 283 of L. of 1880) which expressly amended Section 3 of Chapter 181 of the laws of 1872.

The sections are set out in full for your consideration.

Section 3 of Ch. 181 of the laws of 1872 before amendment read as follows:

"Every person who shall administer to any pregnant woman or prescribe for any such woman or advise or procure any such woman to take any medicine, drug, substance or thing whatever, or manufacture, advertise or sell any such medicine, drug, substance or thing whatever, or shall use or employ any

instruments or other means whatever with intent thereby to procure the miscarriage of any such woman shall upon conviction be punished by imprisonment in a county jail or in a State prison not less than one nor more than three years in the discretion of the Court."

The amending section changed the law to read as follows:

"Every person who shall administer to any pregnant woman or prescribe for any such woman or advise or procure any such woman to take any medicine, drug, substance or thing whatever, or manufacture, advertise, or sell any such medicine, drug, substance or thing whatever, or shall use or employ upon any such woman, or advise or procure any such woman to submit to the use or employment of any instruments or other means whatever, with intent thereby to procure the miscarriage of any such woman shall upon conviction be imprisoned in a county jail or in a State prison not less than one nor more than three years in the discretion of the court."

The necessity for the existence of pregnancy is a matter of controversy between legal minds.

The statutes of 1872 and 1880 expressly provided that the woman must be pregnant. There was no doubt of the legislative intent there. It is argued by some lawyers that the omission of the adjective pregnant in parts of the present statute indicates clearly that the law-makers intended the statute to apply to any woman whether pregnant or not. This doubt should be resolved by a perfectly clear and unmistakable redraft of the law.

Controversy arises most frequently under the second subdivision regarding the use of instruments, when no drugs have been prescribed or taken.

Many lawyers contend that if the woman be not pregnant, where indictment is had under the second subdivision, the defendant may not properly be convicted either of abortion or of an attempt to commit the crime of abortion.

An attempt to commit a crime is defined by the Penal Law (Section 2) to be the doing of any act which tends but fails to effect the commission of the crime. It is contended, therefore, that if the woman be not pregnant the doing of any act, under subdivision 2, could not possibly tend to effect the commission of the crime of abortion.

The pregnant woman who takes any drug or medicine or who submits to the use of instruments, with intent to produce her own miscarriage, is also guilty of a felony. (Section 81, P. L.)

So also is a person who manufactures, gives or sells an instrument, a medicine or drug or other substance with intent that

the same may be unlawfully used in procuring the miscarriage of a woman. (Section 82, P. L.)

Yet, in the depths of another section of our Penal Law (Section 1142) referring to indecent articles, some of the same acts are merely misdemeanors, to wit:

"A person who sells, lends or gives away . . . any instrument or article, recipe, drug or medicine for the prevention of conception or for causing unlawful abortion . . . is guilty of a misdemeanor."

The law has been considered up to the present only with reference to the crime against the unborn child. If the death of the woman results from abortion the law denominates the crime manslaughter.

Section 1050 of the Penal Law, relating thereto, is as follows:

"The wilful killing of an unborn quick child, by any injury committed upon the person of the mother of such child, is manslaughter in the first degree.

"A person who provides, supplies, or administers to a woman, whether pregnant or not, or who prescribes for, or advises or procures a woman to take any medicine, drug, or substance, or who uses or employs, or causes to be used or employed, any instrument or other means, with intent thereby to procure the miscarriage of a woman, unless the same is necessary to preserve her life, in case the death of the woman, or of any quick child of which she is pregnant, is thereby produced, is guilty of manslaughter in the first degree."

Imprisonment not exceeding twenty years is the punishment.

"Quick child," as used in the statute, relates to the embryo after the mother has felt the same move within her.

If the mother, "quick with child," takes drugs or submits to the use of instruments with intent to procure her miscarriage and the child's death results, the mother is deemed guilty of manslaughter in the second degree, a crime punishable by imprisonment not exceeding fifteen years. (Section 1052, P. L.)

The foregoing, gentlemen, constitutes all of the statutory law of the State of New York upon the subject of abortion.

The duties of the practitioner, in regard to which I have been asked, also, to address you, in cases where the death of mother or child results, are clearly defined by law.

Section 1773 of the laws of 1882, as amended by Section 1775 of the laws of 1895, Chapter 846, provides:

"When, in the City of New York, any person shall die from criminal violence or by a casualty or suddenly when in apparent health or when unattended by a physician or in prison

or in any suspicious or unusual manner . . . It shall be the duty of any citizen who shall become aware of the death of a person who shall have died in the manner stated, to report the death forthwith to one of the Coroners or to the clerk in attendance at the coroners' office, of such death."

"Any person who shall wilfully neglect or refuse to report such death to the coroner or clerk aforesaid shall upon conviction be adjudged guilty of a misdemeanor and shall be imprisoned not exceeding one year and five months."

By direction of the Board of Health, abortion, when given as the sole cause of death in physicians' death certificates, necessitates the return of the certificate for further information, the case being one for investigation by the coroner.

Section 171, of the Sanitary Code, which comprises the sanitary ordinances adopted by the Board of Health of the Department of Health of the City of New York, according to the authority vested in this Board by legislative enactment, provides that the name of the physician or physicians who last, or within forty-eight hours, attended any deceased person, into whose death the coroner inquires, shall, two hours before the inquest is held, be transmitted to the Bureau of Records of the Health Department.

If requested by the sanitary superintendent, the coroner must furnish the name of such physician as aforesaid, together with the place he so attended the deceased, and whether or not he was notified of inquest, and whether or not he attended and was examined thereat.

These are the provisions of law in cases where death of the woman results.

The police, who are also, by general custom, notified of suspicious deaths, frequently arrest the last attending physician in abortion cases when it is not clear that such physician was in no way concerned in the abortion.

Much embarrassment, inconvenience, and unpleasant notoriety has been suffered more than once by medical practitioners so arrested, even though they were subsequently discharged.

Where the practitioner is called to attend women upon whom abortions have been performed, it is well to make no examination and to give no treatment without having witnesses present if possible during the examination and treatment.

This is true even though the woman recovers. If she is apparently *in extremis*, the coroner should be notified.

Antemortem statements made by the woman, made when

she has relinquished hope of recovery, are admissible in evidence at a subsequent trial of a defendant charged with causing the woman's death. (*Maine v. People*, 9 Hun., 113; 1 Gr. on Ev. Sec. 156.)

The woman, however, must make known her belief that she will not recover, and the circumstances of the death must be the subject of the statement (*idem.*).

Where the woman does not die, antemortem statements made to the coroner may lead to the apprehension and prosecution of the individuals responsible for her condition.

The practitioner cannot take too many precautions for the protection of his reputation in such cases.

This is true despite the urgent need of his professional services by the patient.

Unscrupulous women and their accomplices have it within their power, under such circumstances, to successfully blackmail the reputable practitioner, who omits the essential precautions for his protection.

Whenever possible, it is advisable to have a second physician attend with the practitioner, who is called in to treat women suffering from the after-effect of abortion. This is true even of hospital cases, where the abortion has been performed prior to the patient's admission to the hospital, and the authorities have not been notified.

Information acquired by a physician in a professional capacity, the relationship of patient and physician existing, which information was necessary to enable the physician to act in a professional capacity is privileged under the law, and may not be testified to without a waiver of the privilege by the patient. (L. 1876, Ch. 448, Section 836, 1496; L. 1877, Ch. 416, Section 1, 4; L. 1891, Ch. 381; L. 1899, Ch. 53. *Henderson vs. Dixon*, 192 N. Y., 238; *People vs. Bloom*, 193 N. Y., 1.)

By statute in the State of New York, it is provided that

"A person duly authorized to practice physic or surgery . . . shall not be allowed to disclose any information which he acquired in attending a patient in a professional capacity and which was necessary to enable him to act in that capacity, unless, where the patient is a child under the age of sixteen, the information so acquired indicates that the patient has been the victim or subject of a crime in which case the physician . . . may be required to testify fully in relation thereto upon any examination, trial or other proceeding in which the commission of such crime is a subject of inquiry."

(Section 834, Code Civil Procedure.)

This rule applies in criminal cases (Code Criminal Procedure, Section 392) to any living patient upon whom a crime is charged to have been committed. (*People v. Brecht*, 120 A. D., 774.)

In 1886, the Court of Appeals held that this section applied in a criminal prosecution for abortion where the patient was living. (*Peo. v. Murphy*, 101 N. Y., 126. Section 392, Code Criminal Procedure.)

The evidence showed defendant had had an abortion performed upon a woman. After the discovery of the commission of the crime, the district attorney sent a physician to attend the woman. The physician made an examination of the woman's person and prescribed for her. Upon the trial, the physician was permitted to give his opinion that an abortion had been performed. This opinion was founded upon personal examination, and upon what the patient had told him. The admission of the testimony was held to be erroneous.

In 1907, reversing on other grounds the conviction of a midwife named Lena Brecht, indicted for causing the death of a woman by abortion, the Appellate Division of the Supreme Court ruled that the privilege did not apply to a criminal prosecution for causing the death of the patient, and the physician called to attend the woman, prior to her death, might properly testify as to the physical condition and ailment of the deceased. (*People v. Brecht*, 120 A. D., 773, aff. 192 N. Y., 581; *People v. Harris*, 136 N. Y., 449; *Pierson v. People*, 79 N. Y., 424.)

"The intent of the statute in making such information privileged is to inspire confidence between patient and physician, to enable the latter to prescribe for and advise the former most advantageously and remove from the patient's mind any fear that she may be exposed to civil or criminal prosecution or shame and disgrace by reason of any disclosure thus made." (*McKinney v. G. S. R. R. Co.*, 104 N. Y., 352.)

The privilege may be waived by the patient (Section 830 of the Code of Criminal Procedure). A physician, also, may disclose upon a trial, any information as to the mental or physical condition of a patient who is deceased, which he acquired in attending such patient professionally, except confidential communications and such facts as would tend to disgrace the memory of the patient, when the personal representative of the deceased waives the privilege. (Section 836 of the Code of Criminal Procedure.)

It seems, therefore, that the professional privilege of physicians

extends to all cases, civil or criminal, save where there is a prosecution for the patient's death, and save where the patient is a living child under sixteen years of age, upon whom a crime may have been committed or where the privilege has been expressly waived by the patient.

32 NASSAU STREET.

## THE USE OF CHLOROFORM IN THE TREATMENT OF ECLAMPSIA.\*

BY

WILBUR WARD, M. D.,

Resident Physician, the Sloane Maternity Hospital.

So much is now being written regarding the subject of eclampsia, its etiology, pathology, and treatment, that one can scarcely scan a current medical journal without meeting with some phase of the subject. To-night I wish to discuss a feature of its treatment that has had little or no attention paid to it. This is the question of the anesthetic to be used in the delivery of patients suffering from the disease, and whether or not it is desirable or necessary to control the convulsive seizures by the use of chloroform, as is so commonly done.

Workers in many places are spending every effort to determine the exact cause of the disease. There is as yet no unanimity as to the exact chemical nature of the excitant. Whatever its nature, it is universally agreed that it is some toxin or toxins circulating throughout the system, which cause the symptoms and the pathological changes.

Concerning the pathological changes there is practical agreement. Briefly, as the whole condition is a toxemia, the body tissues in general show changes induced by the toxins, but the organs chiefly affected are the liver and the kidneys. We know that in every case of toxemia of pregnancy, whether accompanied by convulsions or not, these organs always show some change, very slight or very marked, although in some cases the changes in one may be practically negligible and in the other very intense, or *vice versa*.

The changes in the liver in patients suffering from eclampsia are the changes that concern us most. These are of course variable, and no two pathologists seem to agree exactly as to the finer details of the histology; but on the whole, disregarding

\* Read before the Society of the Alumni of the Sloane Maternity, January 29, 1910.

these fine points, which only the trained pathologist of years of experience can differentiate or describe, the changes found in the liver may be hemorrhages, cloudy swelling, central necrosis, or general autolysis of the liver cells, any one or all (Welch).

In short, these are the lesions in the liver caused by the unknown toxin in cases of eclampsia. We now know that similar changes can be produced by a known agent, ordinary chloroform.

During the past few years, a great deal of work has been done on a hitherto obscure condition, delayed chloroform poisoning. Patients who had undergone surgical operations where chloroform had been the anesthetic would occasionally, in a wholly unexplained manner, show a variety of unexpected symptoms. These patients would sometimes have headache, vomiting, restlessness, leading up to active delirium, convulsions, and coma, with jaundice and albuminuria, and death would occur within four or five days of the operation, which did not seem to be the cause of the symptoms. Careful autopsies and research work by many investigators have shown beyond the possibility of a doubt that the condition is a general toxemia, with marked pathological lesions found postmortem, particularly in the liver, and to a less extent in the kidneys, caused by the administration of the chloroform.

A very careful and painstaking investigation into the pathological lesions produced and the metabolic changes following the use of chloroform as an anesthetic was recently published by Howland and Richards. They found that by simply administering chloroform to dogs to the point of light surgical anesthesia, without any operative procedures whatever, they were able to induce changes in the liver, often after but thirty minutes' administration of the drug. With more prolonged, and especially repeated, anesthetics, which are much more destructive than single ones, still greater changes were produced. These changes correspond exactly to the changes found in the livers of women dying from any cause when suffering from the toxemia of pregnancy. Fatty infiltration, cloudy swelling, hemorrhage, necrosis, and general autolysis appear in the center of the lobules and extend centrifugally, the amount and extent of the lesions depending upon the duration of the anesthesia and the length of time intervening before death.

Objection may be at once made that because these lesions are produced by chloroform in dogs, it does not necessarily follow that the human liver is affected in the same way. "Whether

man is as susceptible as the dog or not is not known. As far as the clinical course is concerned, the symptoms in dogs are reproduced in man as perfectly as one can demand. When the organs are examined it is indisputable that exactly the same thing has happened in man as in the lower animal. It is therefore justifiable to conclude that the toxic effects observed in the dog occur regularly and in the same way in man" (Ewing).

Now, for the application of this to the treatment of eclampsia. Whatever the plan of treatment followed, whether expectant, accouchement forcé, vaginal Cesarean section, or delivery by other means, there is almost always an anesthetic needed at the time of interference. Our usual plan at the Sloane is to deliver as soon as possible, consistent with the mother's soft parts, after the occurrence of the first convulsion, if not before. If the cervix is soft and dilatable, an immediate accouchement forcé is done. If the cervix is rigid and undilatable, preliminary softening with the Voorhees bag is used, the patient meanwhile being put on active anti-eclampsia treatment.

We have here one or two periods when an anesthetic is required, and until last year chloroform was invariably used at the Sloane. The amount of the drug used varied a great deal with the individual case. For the introduction of the bag little is necessary, but the average patient is not easily controlled, her apparent strength is remarkable, and in some cases at least considerable chloroform is likely to be used. This, however, is inconsiderable compared to the amount used and the duration of anesthesia in the actual delivery. I looked over the anesthetic records of the last fifteen consecutive cases of eclampsia occurring at the Sloane before chloroform was discarded. Our charts give only the length of time that an anesthetic is used during the actual delivery, not for the introduction of the bag, if used, or for the control of the convulsions, to be considered shortly.

These records show that the average duration of the anesthesia for each of these fifteen cases was forty-three minutes, even including in the average several postpartum cases, where with normal deliveries, but from one to five minutes of chloroform was used for the control of the head and delivery over the perineum. One case had chloroform administered for 120 minutes, another 107, another 68 and so on. The charts also show that the patients who were in the worst condition upon admission were the ones who received the longest anesthesia. Naturally these patients did not all receive chloro-

form to the surgical degree throughout the entire time, obstetrical anesthesia being all that was desired for at least a part of the time, but even so, it is evident that the anesthesia was prolonged and the amount of the drug used considerable.

A further use of chloroform, as commonly used in the treatment of eclampsia, is for the control of the convulsions. It has been thought that these seizures were most dangerous to the mother and that they must be held in check at all costs. You all know the routine method employed: to keep a careful watch over the patient, with chloroform near at hand, and at the first premonitory sign of a seizure, to give the drug quickly, in rather large amounts, in the hope of successfully warding off the impending spasm; if the convulsion actually begins, the administration of the drug is supposed to be stopped. You also all know how difficult it is to give enough of the chloroform soon enough to prevent the convulsion, and how often the administration is continued until the patient is thoroughly anesthetized, and only then discontinued. The net result is that the patient has received an unknown amount of chloroform, usually frequently repeated as the convulsions recur, and, as we have seen above, it is just this sort of frequent repeated anesthesia that gives the most marked necrosis and hemorrhage in the liver.

And why is it necessary or advisable to control the convulsions? Many reasons are given: that the increased blood pressure during a seizure may cause increased hemorrhages into the liver, with additional destruction of hepatic tissue; a more pronounced tendency to edema of the lungs, to cerebral and internal hemorrhages; the convulsions, if antepartum, may kill the child *in utero*; and, finally, they are very exhausting to the mother.

All these objections to the noncontrol of the convulsions may be perfectly valid, but even so, there seems to be no vital reason why they must be controlled. It is a question just how much the giving of chloroform as usually employed lessens these dangers, and in our treatment of this condition, without attempting to control the convulsions with chloroform, no bad results have been observed. One of our series had twenty-seven typical convulsions within a period of ten hours during the night after delivery, and yet made a perfect recovery. Our feeling is that the convulsions are but an outward symptom as to the severity of the toxic process, an indication of the overwhelming of the cerebral cortex by the toxins, and that simply controlling the convulsions with an agent like chloroform has no effect on the

underlying cause or upon the course of the disease. It is simply controlling a symptom, and is analogous to the giving of antipyretics to control temperature without affecting the cause of the temperature.

Since March 15, 1909, we have had at the Sloane twelve cases of eclampsia in a series of 1,261 confinements. This is less than the average for recent years, the general average for 20,000 cases being 1.79 per cent. This may be explained in three ways: First, the legitimate variation in a hospital service. Secondly, the curtailment of the Roosevelt Hospital ambulance service, because of which many such cases are now taken to another hospital, and, thirdly, which is of considerable importance, the fact that we have used no chloroform in any of our cases of toxemia of pregnancy. Any patient showing any of the symptoms of a toxemia, no matter how slight, has been treated without chloroform. We feel that by this method we have undoubtedly cut down the number of patients showing actual convulsions, *i.e.*, eclampsia. No less an authority than Dr. James Ewing, at the meeting when Dr. Howland presented his paper, in discussing it, said that "the worst offenders (in the use of chloroform) were the obstetricians, and although the warning had been sounded again and again, it had had very little effect on the free use of chloroform." He thought that "a considerable proportion of cases of toxemia of pregnancy were cases of delayed chloroform poisoning."

In these 1,261 women we have used no chloroform whatever in toxemic or eclamptic cases, except in two instances early in the series, in cases not under my care. Neither of these patients were very toxic, as these cases go, and only small amounts were used for delivery. There have been no maternal deaths. A small series such as this means little, and similar results have been obtained under the chloroform treatment in even larger series of cases. Our Sloane records show one series of thirty-four cases in a total of 2,492 confinements, with but one maternal death.

Ether has been used for the actual delivery or for any manipulations when an anesthetic has been required. I have said that no chloroform whatever has been used; occasionally a few whiffs have been given prior to the commencement of the ether, but this amount has been very small, practically *nil*, and has not been used in any of our very toxic cases. These patients take ether as well as chloroform, and there is no difficulty in its use.

Objection has been made to the use of ether in those cases

which seem to be of the renal type, as it has been said that ether is more irritating to the kidneys than is chloroform, and that as the kidneys are most affected, ether should not be used. We have made no distinction, but have used ether in all our cases, even in those appearing entirely renal, believing that even in this type the liver is somewhat affected, and that ether is no more damaging to the kidneys than chloroform (Cushney, Wood). It has also been said by some that ether will induce the same changes in the liver as does chloroform, but this is not generally thought to be the case, and we know of no experimental work to prove it.

Aside from the control of the convulsions, we use the regular accepted treatment of the condition: emptying of the uterus as soon as consistent with the mother's soft parts; veratrum viride, chloral, nitroglycerin, hot packs or hot-air baths, colon irrigations, forced fluids, etc. Looking at the convulsions as purely a symptom, we make no effort to control them on their own account, except as they are controlled by the general treatment which is designed partly to keep them in check and at the same time to stimulate as much as possible the eliminations.

We are not claiming a new road by which all patients can be led to a sure and speedy recovery. There are certain cases that are going to die whatever plan of treatment is followed, and others that are going to get well whatever the treatment. But we think that we can at least cut down our mortality somewhat by not using chloroform, and we do claim that in the light of our present-day knowledge it is advisable not to use any of the drug in the treatment of this class of cases, and that these cases can be handled as easily and as satisfactorily without it.

It is by the courtesy of Dr. Edwin B. Cragin that I am enabled to present this modification of the usual treatment of eclampsia which is now being used on his service at the Sloane Maternity Hospital.

#### REFERENCES.

Howland and Richards. *Jour. Experimental Med.*, xi, 2, 344 (Bibliography).

Welch. *Jour. Am. Med. Assn.*, ciii, 17, 1361.

Ewing. *Proc. N. Y. Path. Soc.*, New Series, viii, 7, 182.

Wood. *Materia Medica and Therapeutics*, 11th edition, 112.

Cushney. *Pharmacology and Therapeutics*, 4th edition, 164, 167.

THE SLOANE MATERNITY HOSPITAL.

A PRELIMINARY REPORT OF TWENTY-SEVEN CASES  
OF LATERO-LATERAL ANASTOMOSIS OF THE  
ILEUM TO SIGMOID FLEXURE OF COLON  
FOR MUCOUS COLITIS.\*

BY

GEORGE H. NOBLE, M. D.,

Atlanta, Ga.

(With four illustrations.)

As THIS paper is in the nature of a preliminary report, I shall give you my observation of these cases, and reserve ultimate conclusions until each one shall have passed a time limit of two years, for I believe that in many cases less time is insufficient to effect a cure of colitis. It is true that a number recover completely in less time, still others make a marked improvement in a few months.

All of these cases were bad ones, and they were willing to submit to anything holding out the least encouragement. With few exceptions, they were poorly nourished, anemic, neurasthenic subjects, often suffering from atonic dilatation of stomach, achylia, pyloric insufficiency, enteroptosis, and various pelvic lesions. They were in a state of invalidism, some confined to bed from a few months to as long as two years, and were selected for the operation because they had been subjected to thorough trials of medical treatment and diet without material mitigation of symptoms.

Of the total number (twenty-seven), eighteen now have evacuations of bowels from one to three times daily without laxatives. Of the remaining nine, three take laxatives, two use injections of either water or oil, two control motions by regulating their diet, one no record received, and one other too recent to record. About 75 per cent. are relieved of constipation sufficiently to avoid the use of medicines. This is a conservative estimate, for only two reported constipation; and the two who acquired the habit of using injections before the operation have not allowed themselves an opportunity to see how the bowels will move without them.

Further improvement may be made by subjecting more of them to proper diet.

In the series of eighteen that have motions daily is included

\* Read before the American Gynecological Society, April 1909.

the one case of diarrhea, in which the daily motions have been remarkably reduced in frequency (one to two per day).

It will be observed that the suggestion of possible diarrhea or frequent evacuations, resulting from anastomosis of ileum with rectum or sigmoid flexure, is unfounded. In fact, the rectum absorbs so much of the fluids that some cases have a tendency to costiveness. While this was more or less disappointing to me, I have learned that by means of this operation, some cases of colitis can be cured even though constipation is not entirely relieved. The explanation for this is that a large percentage of the proteids are discharged directly into the rectum, which, being a more tolerant organ than the colon, and its area of absorbing surface so much less, absorption of the toxins is decreased. This is shown by diminished sulpho-ethers in the urine. There must be, therefore, drainage of enough intestinal current into the rectum to give the colon rest and permit the drying-out process to take place in the lower bowel without toxic effects.

The failure to cure constipation in cases mentioned is traceable to certain causes; for instance, hemorrhoids that were not removed on account of time consumed in doing other operations when the anastomosis was made, lack of exercise, drinking a deficiency of fluids, morphine habit, diseased rectum, enema habit, etc.

*Colicky Pains.*—The relief of colicky pains has been remarkable; some recovered in a few weeks and others gradually improved. Tenderness and soreness also disappeared after the effects of the operation cleared up.

The most rapid relief from colic occurred in cases having daily evacuations; while discomfort and slower progress was noted in subjects with stomach stasis, atonic dilatation, and absence of free hydrochloric acid. The discomfort in the latter class of cases was usually referable to the stomach, but pains in the colon were present in some instances for a greater or less length of time. This, however, is a natural sequence of the discharge into the jejunum of food improperly prepared for digestion.

*Gas or Tympany.*—One of the most noticeable effects was the relief of gaseous distentions; some enormously distended abdomens, requiring anodynes to relieve pain almost daily, being promptly and effectually relieved by the operation. Only a few of the recent cases report any discomfort from this cause. I have occasionally met with the statement that while distention is less and they pass no more flatus than usual or in health, it escapes more easily.

*Mucous Discharges.*—Changes effected in mucous discharges are encouraging, for twelve pass no mucus at all, ten very little at times, four recent cases report mucus much decreased, and one case not heard from directly. This showing is significant when we consider the fact that only in ten cases has it been more than twelve months since the operations were performed.

*Headaches.*—Much care was exercised to avoid ascribing headaches to wrong causes, and in this way it was determined that twenty-three cases were due to intestinal toxemia. Of these, twenty-two have been cured, one case not reported. Seven out of the twenty-seven have menstrual headaches, and three of them have stomach stasis. The relief of this symptom (toxic headaches) has been a source of gratification.

*Gain in Weight and Strength.*—All of these have gained more or less in weight and strength. Eleven cases report great gain, seven moderate gain, two slight gain, one gained in strength but little in weight, one gained in weight but not much in strength, and one not reported. With the four others of recent operation, sufficient time has not elapsed to make a just report, even though they claim to be making satisfactory progress. One of them, however, gained four and a half pounds in the first four weeks.

The fact that not a single case has lost either flesh or strength, but, on the contrary, have gained more or less, shows that nutrition is not interfered with and that they take up an ample supply of fluids.

*Appendectomy.*—In two cases the appendix had previously been removed without affecting the colitis. In about half of the remaining cases, appendectomy was done at the time of anastomosing intestines, but none of them showed any advantage or improvement over those in which the organ was left intact. This corroborates my views, that removal of the normal appendix cures nothing.

*Outdoor Exercise.*—They have all been charged with the importance of outdoor exercise. This injunction has been followed by a few. Others have practised it in a desultory way, while three make no attempt at all. These latter cases are the ones in which but little improvement has been made.\* They are neurasthenic, hysterical subjects, and avoid leaving their apartment when possible, and have not been able to secure either

\*Since writing this paper, one of these cases has made considerable improvement.

proper diet or medical attention. In better circumstances, they would, I am sure, show improvement.

Outdoor life and graduated exercise is secondary only in importance to diet, and, if neglected, the full benefit of the operation cannot be obtained in all cases. Though diet is an important measure, I purposely delayed prescribing it for these cases until sufficient time elapsed to determine the effect of the operation uninfluenced by treatment. In more than 50 per cent.\* it was unnecessary to exclude proteids and excess of starchy foods. Others when showing only slight decrease of the putrefactive process, were put upon a modified diet, because a number of them lived in the country and small towns where it was impossible to secure the right kind of food and expert medical attention.

In some instances it was difficult to secure pure Bulgarian and other ferments. I, therefore, found it more practicable to substitute fresh buttermilk and clabber for them.

In atonic dilatation of the stomach and decrease or absence of free hydrochloric acid, solid food of digestible character was administered for the purpose of stimulating secretion and motor action of the stomach. Laxative diet seemed to be beneficial when the state of digestion would permit its use.

The feeding of fresh buttermilk, and especially clabber, is very acceptable, and the efficiency of the bacilli acidi lactis seems not impaired by other bacteria usually found in milk. This form of milk is preferred by patients to that prepared by pure culture, on account of the taste and convenience of preparation. It should be taken before an excess of lactic acid is formed; and it seems to me that less acid is produced in a given time, and fermentation takes place more rapidly when fresh milk is inoculated with clabber before setting it aside to ferment.

*A Case of Spontaneous Anastomosis.*—After waiting thirteen years for a postmortem examination upon a woman with a history of interest, I was rewarded by finding a spontaneous latero-lateral anastomosis between the lower end of the ileum and sigmoid flexure. The cause of this artificial communication was a true enterolith. The stone was covered with numerous sharp spines, which would from time to time penetrate the walls of the intestines and excite sharp attacks of peritonitis; the last one causing her death.

The opening was about one inch in diameter, surrounded by

\*Cases with bowels moving daily.

a firm band of scar tissue except at one point, where the adhesions were peritoneal in character, the muscular coats being unapproximated.

The stone was lying in the colon just above the common opening, and was prevented from descending by a well-marked cicatricial band, which constricted the lumen of the canal. In this way, the enterolith effectually blocked the colon, preventing anything escaping around it, except fluids. The main intestinal current was, therefore, diverted through the anastomosis from ileum to sigmoid flexure. A small quantity, however, must have passed through the colon. The colon showed no signs of atrophy at any point, nor was there any evidence of fecal accumulations above the obstructing stone. The immediate bed of the stone was an immense ulcer with thickened base, which doubtless was the principal cause of frequent attacks of diarrhea.

The woman lived in this condition for more than thirteen years with fair amount of flesh and strength, showing rapid signs of recuperation after each attack. She even passed through a severe spell of typhoid fever two or three years before her death. There was nothing pointing to a lack of nutrition as might be suspected in diverting the intestinal current from the ileum at a point eighteen inches from the cecum.

Now, this finding, together with the fact that for various purposes, the ileum has been resected and anastomosed to the lower end of the large intestine a number of times, completely excluding the colon without seriously affecting the health of the patients, supports the proposition that partial diversion of fecal current does not necessarily interfere with nutrition; and that it may be substituted for intestinal exclusion, colostomy, cecostomy, appendectomy, etc., in mucous colitis with the assurance that it will not prevent improvement in general health. It is not attended by the unpleasant feature incident to artificial anus or external drainage and flushing of colon, nor is it liable to be followed by impaction or atrophy of colon from disuse; for its functions are not lost, a small part of the fecal current being sufficient to preserve them. This is shown by the postmortem specimen. In addition, the discharges from the ileum acting as a stimulus to the sigmoid flexure excite peristalsis at both extremities of the large intestine. Active peristalsis has been seen in a few thin patients.

The operation overcomes constipation in most cases, and relieves colic, gaseous distention, and mucous discharges in a reason-

able time with few exceptions, and the latter improves more or less slowly, according to the influences of coexisting diseases.

The operation is based upon the principle that mucous colitis is largely caused by constipation and putrefactive decomposition. From this point of view, it will be observed that the direct object of the anastomosis is to drain the most intensely infected section

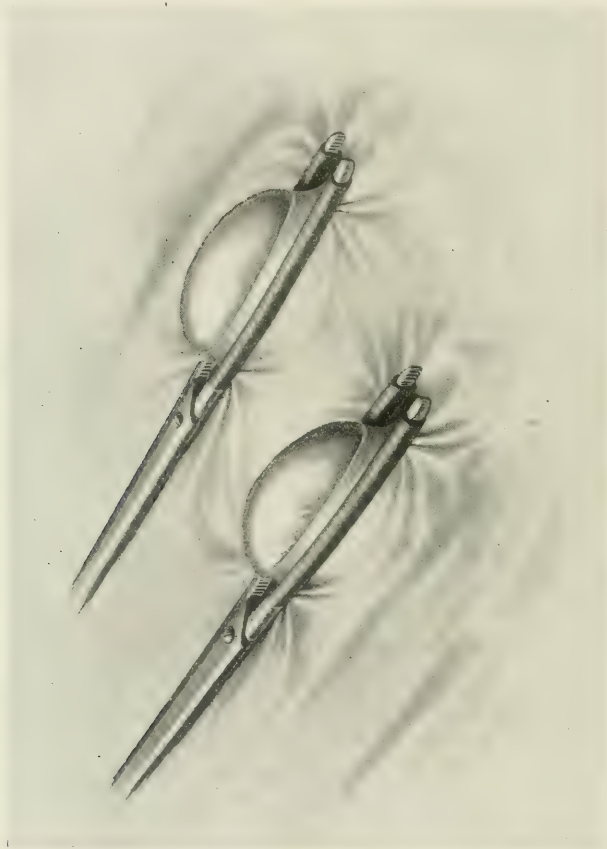


FIG. 1.—Two slits about one and a half inches long and four or five inches apart are made in a sheet of rubber. Through each of them a knuckle of intestine is drawn and clamped.

of the ileum, preventing its discharges into the cecum; for the amount of decomposition, irritation, and absorption of toxins is in proportion to the quantity and character of material entering the colon.

In the technic of the operation, the suture method is preferred, and the anastomosis made as low down on the ileum and

sigmoid as the two portions of the intestinal canal can be approximated without tension. Loops are drawn out of the abdomen

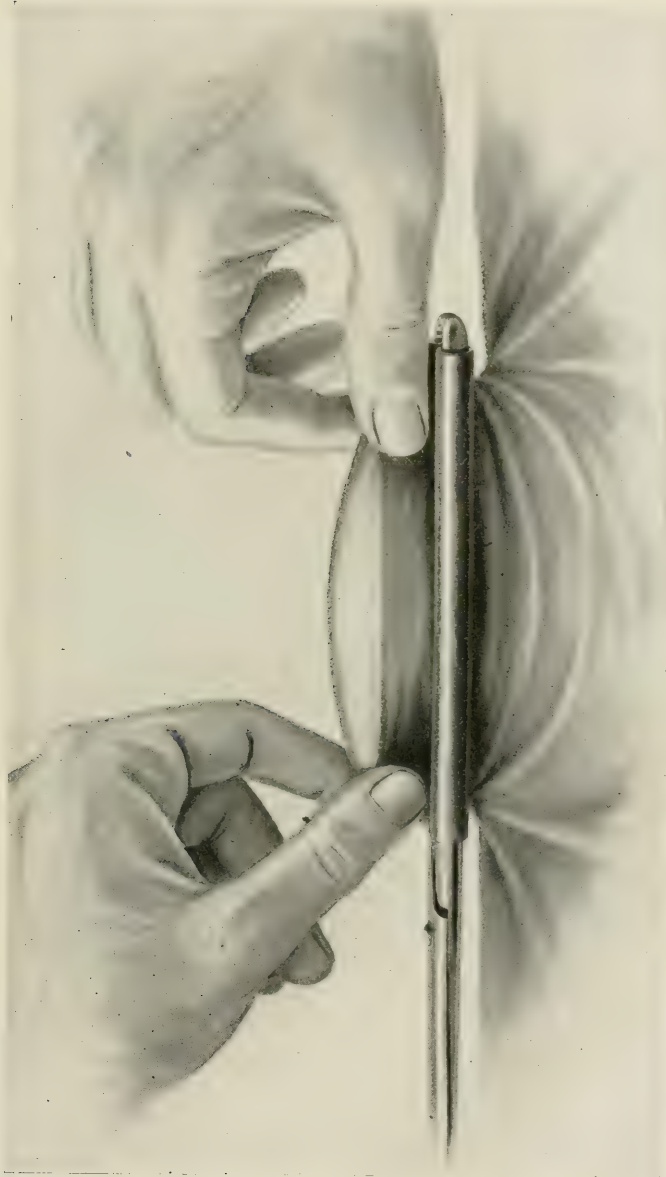


FIG. 2.—A knuckle of intestine is drawn through each slit in the rubber and when placed in position the rubber is stretched and clamped close to the intestine.

far enough to make the work easy and satisfactory. In this way, liability to angling of the bowel is avoided. The danger to in-

fection is minimized by the use of the rubber dam. This is a piece of rubber sheeting about fourteen inches square, in which two slits are cut about an inch and a half long and six inches apart, through which the knuckles of the intestines are drawn. The rubber is grasped between the thumbs and fingers of both hands and slightly stretched as each loop of intestine is placed in



FIG. 3.—Preparatory to suturing, a piece of gauze is placed between the clamps before they are drawn together.

the clamp. In this way, none of the intestine except the immediate portion involved in suturing is exposed to infection from opening the lumen of the canal. After the raw edges are sutured, the exposed parts are thoroughly cleansed, and the clamps and rubber dam are removed. The operation is then completed aseptically.

By the use of the rubber dam, I think I have prevented a cer-

tain amount of infection. Before adopting its use, I had in one case a slight infection of fatty tissue of the abdominal incision, but none since then.

Though intestinal anastomosis is a travesty on asepsis, the magnitude of the operation does not seem to be great when executed with due precaution. This series of twenty-seven operations



FIG. 4.—Spontaneous anastomosis between ileum and sigmoid flexure: *UV*, ileum; *XY*, lower end of colon; *Z*; enterolith; arrow; direction of fecal current.

shows no mortality, and in each instance other operations (two to four) were done at the same time with one exception.

I am quite sure openings of various sizes produce different effects, but I have not been able to determine satisfactorily the dimensions producing best results.

Large openings have a tendency to overcome constipation by turning a greater quantity of the intestinal current into the rec-

tum, but it has occurred to me that if the entire discharge of the ileum is diverted, it might possibly result in either atrophy of the colon or regurgitation and accumulation of feces in it; in the same way it occurs in "dead ends." This, I am inclined to believe, is not likely to occur, for, under the influence of intra-abdominal pressure, enough fluid will escape into the cecum to prevent it. If this is true, large openings will insure better rest. On the other hand, when small openings are made, a larger proportion of contents of the small intestine is delivered into the colon, producing more irritation and decomposition, requiring much longer time for recovery, and has less tendency to overcome constipation.

The length of the incision varies from one to one and a half inches; and I think the latter is preferable, for it makes due allowance for contraction of the aperture. The first effect of the operation upon the bowels is spontaneous evacuation about the third day, and repeated daily; but if for any reason they remain in bed two weeks, the evacuations become less frequent. A day or two after the operation, evidence of increased intestinal putrefaction is shown in the coated tongue and increase of indican in the urine. It continues for the period corresponding to the sloughing of the edges of the anastomosis ring; but when this process is completed, it rapidly decreases. Tests for indican show corresponding changes and similar results are recorded in the two cases in which the urine was examined for indolic acid.

It has been said that "when constipation is at an end, the colitis has a tendency to get well," and it has more than a grain of truth in it; but this report incidentally shows that some recoveries take place in the face of the fact that constipation is not entirely relieved. This, however, should not lead to underestimate the importance of diet, exercise, outdoor life, and the intestinal flora.

Evacuation of bowels daily carries away a part of the putrescent material, resulting in more or less relief of symptoms; but, unless thorough, it is delusive, for symptoms of the disease persist so long as the nidus and putrefactive bacteria continue to fill and inhabit the intestines in excessive quantities. Even going back to this proposition, we find conditions predisposing to fermentation and septic contamination of food either in the mouth or stomach, acting as contributing causes of putrefactive changes in the bowels.

It is clear, therefore, that dependence should not be placed

upon any operation to the exclusion of treatment of coexisting diseases or complications. And I may add that some of the most important of these are diseases of the pelvic organs, predisposing to invalidism.

131 SOUTH PRYOR STREET.

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## SUPPURATION OF A UTERINE FIBROID WITH UNUSUAL MANIFESTATIONS.\*

BY

EDWARD A. SCHUMANN, M. D.,

Out-patient Surgeon and Pathologist, Gynceean Hospital,  
Philadelphia, Pa.

SUPPURATION of fibroid tumors is a fairly common complication of these growths and one which is well understood both from a clinical and a pathological standpoint. Occasionally, however, a case presents itself with rather unusual features, and in which the phenomena of inflammation cause unusual results. Such a case is the one here reported.

L. D., a married negress of thirty-nine years, was admitted to the Gynceean Hospital on the service of Dr. Erck, October 6th, 1908.

She gave a history of some bearing down pain in the abdomen, much increased during the fortnight preceding admission. Menstruation had been profuse for some time, and for four weeks she had been bleeding constantly.

Vaginal examination disclosed the presence of a large multinodular fibroid tumor, apparently nonadherent.

From her admission the patient had a constant elevation of temperature,  $100.4^{\circ}$  being about the average rise. She had chilly sensations, with most intense abdominal pain and marked prostration.

A diagnosis of suppuration of a fibroid was made and abdominal hysterectomy was performed, after which the patient made an uneventful recovery.

The specimen consists of a fibroid uterus with its appendages intact. The uterus measures  $13 \times 12 \times 12$  cm., is roughly ovoid in shape, its surface smooth and with no evidence of surface inflammation.

The tubes and ovaries are the seat of old chronic catarrhal salpingitis. On section, the uterine muscle is greatly thickened, and contains a number of fibroid nodules. The nodules vary from 1 to 3 cm. in diameter, are spherical, hard, and well encapsulated; they show no evidence of degeneration.

\* Read before the Philadelphia Obstetrical Society.

The cavum uteri is distended, being 10 cm. in length and 2 cm. in width. The endometrium is smooth and atrophic.

The cavity of the uterus is filled with a submucous fibroid polyp, somewhat soft, but not markedly degenerated. In this polyp is traced to its attachment, it is found to spring from the depths of the fundal portion of the uterus.

At the point of origin is a small (1 cm.) area of intense inflammation, with the formation of a small amount of greenish pus. The surrounding tissues are deep purple in color, evidently becoming gangrenous, and the entire area under high tension, the pus escaping with a rush, when an opening is made for it.

The point to be emphasized in this case is that the constitutional disturbance and inflammatory reaction were due to a relatively minute focus of suppuration but one in which the pus was under high tension. A routine examination of the tumor and uterine appendages gave no hint of the cause of the disturbance, which was only made manifest by the opening of the small abscess cavity about the root of the polyp. The case serves well as another illustration of the importance of pressure in relation to the general reaction produced by purulent processes.

348 SOUTH FIFTEENTH STREET.

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## A DOUBLE UTERUS WITH LACERATION OF THE CERVICES.

BY

GEORGE ERETY SHOEMAKER, M. D.,

Gynecologist to the Presbyterian Hospital,  
Philadelphia.

(With two illustrations.)

A CERTAIN clinical importance of no inconsiderable interest surrounds the anomaly of the divided uterus. If it were not for the possibility of pregnancy the division would have little influence in itself, although the tissues are subject to the degenerations, tumor formations, and diseases of the well-formed uterus. Only in the event of one of the canals being without communication, either with the other uterine canal or with the vagina, would trouble follow in the absence of pregnancy and this from lack of drainage of menstrual blood. Twelve cases of hematometra from retention in the undeveloped half of the uterus are tabulated by Kehrer (*Das Nebenhorn des Doppelten Uterus*, Heidelberg, 1900, page 100). The double uterus is, however, very frequently a fruitful one, as the corresponding

ovary and tube may not partake of the error of development, and even if on one side they did, migration of the ovum or spermatozoon across the abdomen has produced pregnancy in the opposite side in several reported instances. When pregnancy occurs a menace at once begins to the health or life of the mother. The ultimate result is largely dependent on mechanical conditions. As is well known, the extent of the division varies from a mere notch in the top of the fundus with no partition in the uterine canal up to such a complete separation as to practically form two separated uteri each with a tube, ovary, and vagina. Where either side is well developed, pregnancy may proceed as usual, the woman may bear several children, and since the discovery

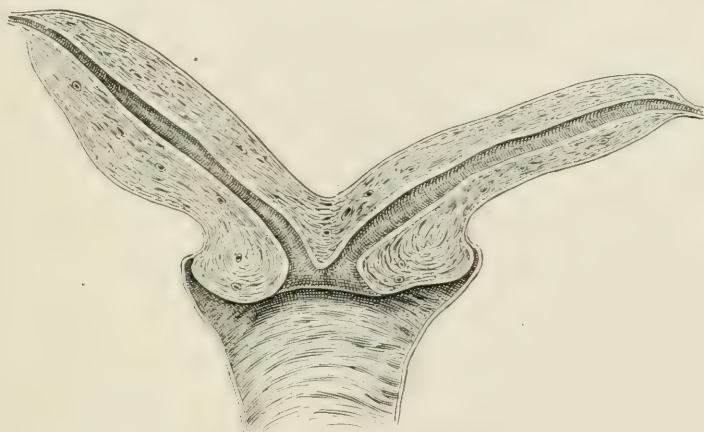


FIG. 1.—Uterus duplex bicornis.

of the division is often accidental, doubtless many women live normal fruitful lives with division present but unsuspected. Even in these cases the mere presence of a second horn if rudimentary is a menace for the future.

In Dr. Erwin Kehrer's study of the rudimentary horn of the double uterus he collected eighty-two cases reported between the years 1869 and 1899 in which pregnancy occurred on the poorer side. In thirty-nine out of the eighty-two or in more than 47 per cent. of these one or more living children had previously been delivered, doubtless from the better side, before rupture or some other catastrophe followed a pregnancy in the rudimentary horn. A woman known to have a double uterus must therefore be studied carefully in the early months of every recurrent pregnancy, and if this happens to be on the rudimen-

tary side laparotomy and the removal of the horn must be done, leaving the good side for future pregnancies. Pregnancy on the better side should be allowed to go on, especially if, as will probably be the case, the pregnant side assumes a pyriform shape with a firm wall continuous with a developing cervix below, while the other horn may be felt as a lateral notch or excrescence. Abortion may occur, especially in a first pregnancy, but the attempt to carry a child will have developed the uterus and the next pregnancy may go on to term. This fortunately happened in a case personally reported. When either side is pregnant decidua form on both sides, according to J. Whitridge Williams.

The case here reported illustrates that chronic glandular degeneration with hemorrhage at menses continuing for years after pregnancy may be found in both halves though only one was ever pregnant. It also illustrates that the patient with double uterus may have disabling injuries of the double cervix and birth canal which surgery can completely correct, restoring the general health.

The symptoms which brought Mrs. A., white American, to the Presbyterian Hospital June, 1909, were menstrual hemorrhage and backache with bearing down, dating from her single labor five years before. Placenta previa with severe bleeding had then required rapid delivery which her physician accomplished with forceps, severely tearing the cervix.

The pregnancy was on the right; the child was well-developed but lived only a day. When I saw her the patient was twenty-four years old, in good health except for exhaustion from menorrhagia, the periods lasting ten days with ten changes of napkin a day gradually lessening to three. One period had amounted to a severe hemorrhage, requiring a vaginal pack. Examination showed the external genitalia normal in development, a narrow median mass of hypertrophied connective tissue on the anterior vaginal wall descended between the labia, but it was part of a small cystocele. The perineum was moderately torn. The cervix had been irregularly lacerated and appeared spread out like an oblong flat knob two inches across, the greatest width from side to side. Half an inch inside of it began a septum a quarter of an inch in thickness, which divided the two uterine canals low down, but the uterus was split from above well into the cervical segments. One half stretched toward the right almost horizontally, and felt in bulk like a small cylindrical uterus lying on its side. The canal measured three inches.

The other uterine horn, directed strongly to the left, was smaller in diameter though its canal measured the same. When a pair of curved closed hemostatic forceps was introduced to the fundus of each canal the handles crossed just outside the cervix. There was no indication of a vaginal septum or other anomaly, but the cervix was pinned back to the vagina by a broad cicatricial attachment. The variety of malformation resembled most nearly the uterus bicornis duplex, or bicornis bicollis, as figured diagrammatically by Kehrer, though the stellate tear of both cervixes indicated that the septum between them had yielded more than the right lateral wall.

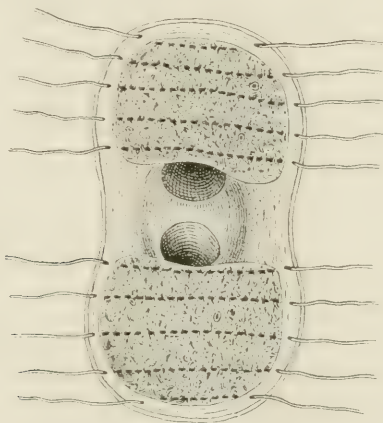


FIG. 2.—Laceration of double cervix in uterus duplex bicornis.

*Treatment.*—Curettement to find the cause of hemorrhage showed well-marked hypertrophic glandular endometritis in both horns, worst on the right, this diagnosis being later confirmed by the microscope. To increase the mobility of the cervix and lengthen the vagina behind, a cross-cut was sutured longitudinally in the cicatricial tissue behind the cervix. To avoid closing either uterine canal in the repair, the septum was continued down for half an inch to the external opening, by denuding and suturing the anterior and posterior lips, tying the knots in the right cervical canal. Each side of the double cervix was then reconstructed in the usual way by suturing denuded flaps as near as possible to their original symmetrical position. The perineum was then repaired by a submucous continuous catgut suture, after raising a posterior flap which was not removed.

Five months later the patient reported for examination. Hemorrhage and pain at her menses had disappeared. There was no bearing down and she was symptomatically well. The septum between the cervixes had reunited in part, and while the cervixes still resembled a broad flat prominence, both canals were pervious, and the pelvic support was excellent.

1831 CHESTNUT STREET.

## FIBROID TUMORS COMPLICATING PREGNANCY AND THE PUERPERIUM.

WITH REPORT OF FIVE CASES.

BY

WILMER KRUSEN, M D.,

Professor of Gynecology in the Medical Department of Temple University, Philadelphia, Pa.; Chief Gynecologist to the Samaritan and Garretson Hospitals and Consulting Gynecologist to the Charity and Mercy Hospitals, Philadelphia, Pa.

(With two illustrations.)

FOUR of the five cases of fibroid tumor complicating pregnancy herewith reported were operated upon within the short space of two months.

CASE I.—Mrs. R., aged thirty-four years, was first seen with her family physician, Dr. Leon Vanhorn, about the middle of February, 1908, and the diagnosis of fibroid tumor complicating pregnancy was made. The patient presented a history of having first menstruated at thirteen years of age. Her menstruation was regular, lasting about five days, and normal. She had had one child nine years before and no miscarriages. About one year previous, she had noted a sore spot in the abdomen; and six months previous the flow had been rather excessive. In September of 1907 she had consulted a physician who informed her that she had a growth. Since November, 1907, she had noted a progressive enlargement of the abdomen, and since that time she had had two attacks of bleeding which lasted six weeks.

On examination, the abdomen was found enlarged, irregular in outline; a mass above of firm consistence was noted, while the cervix and lower uterine segment were softened. Pressure symptoms were marked and the patient suffered considerable discomfort and some dyspnea. Urinalysis showed a few granular casts. Blood examination, hemoglobin, 95 per cent.; erythrocytes 4,030,000; leucocytes 7,800.

In view of the pressure symptoms, after another examination under chloride of ethyl anesthesia, confirming the diagnosis of a fibroid complicating pregnancy, a supravaginal hysterectomy was performed on February 27, 1908. A large fibroid tumor

with the pregnant uterus was removed and herewith exhibited. The patient made an uninterrupted recovery and left the hospital March 24, 1908.

*Specimen No. 1.—Fibromyoma uteri with pregnancy.*

*Physical Appearance.*—The fibroma, as large as a fetal head, is in the posterior wall and fundus of the uterus, surrounded by the thick uterine wall as a capsule. The fetus looks to be about three months old. The uterus containing the fibroma and fetus weighs 2700 G. and measures in circumference 21 inches by 23 inches.



FIG. 1.—Fibromyoma uteri with pregnancy. Case I

Microscopically, the tumor presents the concentric arrangement of spindle-shaped connective tissue cells and thick-walled blood-vessels so typical of hard fibromyoma of the uterus.

*Diagnosis.*—Fibromyoma (intramural) of the uterus with a pregnancy of three months.

\* CASE II.—Mrs. W. P., aged twenty-four years, was seen in consultation with her physician, Dr. F. C. Lehman. There was a history of a miscarriage six weeks previously. A curettage had been performed at that time and the uterus thoroughly emptied.

On examination the uterus was found enlarged and a fluctuating mass noted on the right side. Diagnosis was made of pelvic abscess with involvement of the appendix. The patient was running an irregular temperature and operation was advised. The patient was admitted to Samaritan Hospital March 10, and operated upon March 12. Abdominal section was performed and an accumulation of pus was found between the uterus and bladder, and a sloughing fibroid tumor about 4 inches in length and 3 inches in width was shelled out of the anterior wall of the uterus by our manipulation. A pus sac was found on the right side involving tube, ovary, uterus, omentum, and vermiform appendix. Supravaginal hysterectomy and appendectomy were quickly performed and two large pieces of iodoform gauze introduced and brought out at the lower angle of the abdominal incision. The patient was quite shocked at the completion of the operation, but she made an uninterrupted recovery and left the hospital March 31, twenty-one days after admission.

*Pathological Record, Exhibit No. 2.*—Uterus and appendages and fibromyoma. Clinical diagnosis, degenerating fibromyoma.

The uterus is slightly enlarged and its walls soft and boggy. On the anterior wall, at the level of the internal os, is a thick-walled sac opening into the cervix and large enough to hold a goose egg. The walls of this sac are also soft and boggy. The tumor which was shelled out of this sac during the operation is 4 inches long and 3 inches wide. On section it is seen to be flesh-colored and a wavy irregularity of the cells is noted. It is soft and apparently gangrenous in one small area.

The ovaries contain a few follicular cysts. The tubes are thickened and elongated. The microscope reveals a septic metritis, a myoma undergoing degeneration, inflammatory changes, and a purulent salpingitis.

CASE III.—Mrs. M. L., aged twenty-seven years, was seen in consultation with her physician, Dr. Rae S. Dorsett, the first week in April, 1908, with a history of having had for several years pain in the right side which was worse after exercise. Last menstruation was in November, 1907. The abdomen was considerably enlarged and extreme tenderness was noted on the right side with a sulcus separating it from what was apparently a five months pregnant uterus, pushed upward and to the left. Diagnosis of fibroid complicating pregnancy was made, and because of the relative position of the uterus and the growth and the evidence of inflammatory changes present, operation was advised. The patient was admitted to the Samaritan Hospital on April 8, 1908, and supravaginal hysterectomy performed on the ninth and specimen No. 3 removed. The patient made an uninterrupted recovery and left the hospital on April 28.

Specimen No. 3 is a fibromyoma uteri with pregnancy.

Physical appearance. The fetus of five months is enclosed in the unruptured membranes. The fibroma is intramural, 14 by 13 inches in circumference. Sections show the concentric

arrangement of fibres in a hard fibroma with softened areas which can be easily scraped out. The whole specimen weighs 2900 G.

Microscopically, the main tumor mass presents the appearance of a hard fibroma with here and there areas of very large spindle cells with large round nuclei suggesting soft fibrous or sarcomatous change. The blood-vessels have thick walls and are numerous. The softened areas noted macroscopically are chiefly necrotic tissue with small round-celled infiltration, especially surrounding the necrotic areas.



FIG. 2.—Fibromyoma uteri with pregnancy. Case III.

*Diagnosis.*—Fibromyoma (intramural) undergoing inflammatory changes of the uterus with pregnancy.

CASE IV.—I am indebted to Dr. Swithin Chandler for the privilege of reporting this case. Mrs. M., aged twenty-eight years, was admitted to the Garretson Hospital on April 15, 1908. Her health had previously been good until six weeks prior to her admission to the hospital, when she consulted Dr. Chandler who made the diagnosis of fibroid tumor complicating pregnancy and advised hysterectomy, which was performed on April 16. The ovaries were healthy and were not removed. The patient made an uninterrupted recovery and left the hospital on May 5, 1908.

Specimen No. 4 is a uterus with fibromyoma and pregnancy. A fibromyoma of typical appearance on section is seen to occupy the interior wall and fundus of the uterus. A fetus of about six weeks of age occupies the uterine cavity. The membranes are intact. The whole specimen weighs 850 G. and is 12 inches and 14 inches in circumference. The tumor is hard and on section reveals the distinct concentric arrangement of fibers characteristic of fibroma. The color is gray. Microscopically, it is composed of elongated connective tissue cells and an intercellular substance of fibrous material traversed by thick-walled blood-vessels.

*Diagnosis.*—Intramural fibromyoma of the uterus with pregnancy.

CASE V.—Mrs. E., aged thirty-four years, the wife of a physician, was admitted to Samaritan Hospital on June 14, 1906, with a history of having had a miscarriage a few weeks previously. On examination, a fibroid tumor of the uterus was found extending above the umbilicus. The patient was running a septic temperature and I declined to operate until June 28, when it became very apparent that the only hope of saving the patient was by celiotomy, which was performed on that date. The superior surface of the fibroid was found adherent to the lower border of the stomach and the omentum. This part was so much infected and so rotten that it became detached during the removal of the growth, and the detached portion of the tumor with the omentum was subsequently removed. The patient made a slow recovery and left the hospital on August 1, 1906, forty-nine days after admission.

*Pathological Record.*—The uterus was enlarged uniformly. Weight, 5 pounds. Opened interiorly, it revealed a single tumor attached to the fundus by a broad base. The tumor resembles muscular tissue. The interior of the uterus was filled with pus which, stained, shows streptococci. Fundus of the uterus was attached to the omentum and suppurating. The tumor was composed of smooth muscle fibers, but very little fibrous tissue. The endometrium was slightly thickened and showed inflammatory changes.

*Diagnosis.*—Myoma of the uterus.

#### COMMENTS.

*Frequency.*—According to Jewett, fibroids complicating pregnancy are not common. Pinard observed eighty-four instances of this complication in 13,915 consecutive cases of labor, or 0.6 per cent., and forty-nine of these patients were over thirty years of age when pregnancy first occurred. Parvin stated that relative sterility usually resulted from fibroids of the uterus; thus, while the average sterility of women is one in eight, in those having fibroids it is one in three. Charpentier's statistics of 1,554 cases

of fibroids showed sterility in 476. Conception does not usually occur if the neoplasm is submucous or interstitial, but it is more apt to be found in the subserous type. The changes in the endometrium frequently cause premature expulsion of the ovum. The profuse and irregular hemorrhage and excessive glandular secretions present unfavorable conditions either for the fecundation of the ovum or for its development should fecundation occur. It has been frequently noted that the removal of a polyp from a sterile woman is very shortly followed by conception, although many years of sterility have preceded.

Another cause of relative sterility is the great difficulty of uterine dilatation induced by the growth. In one interesting case reported by Haultain, the dilatation of the uterus was so interfered with that the cavity was distended in the form of an hour-glass with the placenta situated in the upper compartment and the fetus in the lower until the eighteenth week, when, after the fetus was expelled, it was found impossible to remove the placenta as the communication between the two cavities was not large enough to admit a finger, and death occurred from septicemia.

*Dangers.*—It may be well to enumerate the dangers and degenerative processes that may be produced by this complication of pregnancy:

1. These growths usually increase in size during this period; this is often edema rather than true hypertrophy.
2. In pedunculated growths the pedicles may become twisted and the growth gangrenous, as in Case II, and peritonitis ensue.
3. The tumor may affect the position of the child. In Ols-hausen's series 53 per cent. were vertex, 24 per cent. breech, and 19 per cent. transverse in position. Lefour found that in 100 pregnancies 49 per cent. showed abnormality in presentation.
4. The presence of the tumor may produce placenta previa with all of its dangers to both fetal and maternal life.
5. It may cause postpartum hemorrhage of a serious type by interfering with normal uterine contraction.
6. Preexisting adhesions in a fibroid pregnant uterus may produce symptoms similar to those found in adherent retro-flexed gravid uterus, and impaction of the mass in the pelvic cavity and abortion.
7. A fibroid pressing upon the tubes has been noted as a cause of tubal pregnancy, the condition being unrecognized until rupture occurred.
8. The most common result of this complication, but not the

least dangerous, is abortion, and as normal involution is seriously impeded, both hemorrhage and septicemia are liable to occur; for instance, Lefour found that in 307 cases abortion took place thirty-nine times, ending fatally to the mother in fourteen cases. Nauss, in 241 cases, noted forty-seven abortions, and Lefour, even in twenty-three induced abortions, observed three deaths; so that even when the complication was recognized and a selected procedure employed danger was present.

9. A tendency to prolapsus of the umbilical cord has been noted.

10. Rarely a spontaneous thinning and rupture of the uterus may occur.

11. Webster claims that there is greater degeneration of the cardiac muscle and of the renal and hepatic epithelium and that the heart is more dilated than in normal pregnancy.

12. The pressure symptoms are often annoying; varicose veins and edema of the lower extremities are frequent as venous engorgement results from obstruction of the veins while the arteries continue to pour blood into the neoplasm.

It is by a careful study of these dangers and possibilities in the given case that we can arrive at a decision whether to operate or to wait for delivery.

*Diagnosis.*—The diagnosis of a fibroid tumor complicating pregnancy is often beset with difficulties. It may be mistaken for multiple pregnancy or gestation in a bicornate uterus. In Case III, which presented a distinct sulcus between the two enlarged areas, this fact was borne in mind. The sudden increase in size of a neoplasm should direct attention to the possibility of pregnancy. The presence of amenorrhea coincidently with enlargement of the uterus is almost characteristic. When menstruation continues in spite of gestation, as it occasionally does, then palpation is the only method of making the diagnosis; and the value of an anesthetic in order to make a satisfactory bimanual examination may be emphasized.

If the patient gives, as in one case, the history of gradual abdominal enlargement extending over several months and then a cessation of menstruation, diagnosis is less difficult. But where there is simultaneous development of the uterus with amenorrhea, the physician is often perplexed and compelled to study the case carefully before giving a definite opinion.

*Treatment.*—The treatment must be decided only after the study of the individual case, taking into consideration the size,

condition, and position of the neoplasm, and the period of gestation. Enucleation of the growth during pregnancy is a formidable procedure on account of the vascularity present and because of the danger of sepsis, hemorrhage and subsequent rupture. I believe it unwise to perform myomectomy upon the pregnant uterus.

Abortion or the induction of premature labor is unjustifiable because of the dangers encountered. If the patient is seen after the fetus is viable, the case should be carefully watched and Cesarean section, followed by supravaginal hysterectomy, performed about the middle of the eighth month. Noble states that in necrotic and infected fibroids complicating labor or the puerperium and when virulent infection exists, the old method of extraperitoneal treatment of the pedicle by means of the *serre-nœud* or the elastic ligature and transfixion may be indicated.

In Case II in which we had a necrotic fibroid and perimetritic abscess we employed the gauze coffer-dam drain.

Davis warns against the attempt to perform celio-hysterotomy in these cases, as the uterus which is the seat of fibroid disease will not heal properly after incision and suture.

Even in those cases in which labor occurs spontaneously, certain complications have been noted. The growths hinder uterine contraction or may cause exhausting after-pains. Great difficulty may be encountered in removing the placenta; many years ago Goodell called attention to the danger of attempting to force the hand into the fibroid uterus. The danger of sepsis is greater. Spiegelberg believes this may occur in subserous growths due to the passage of microorganisms through the lymph spaces.

During the process of labor the pains may be very irregular, often insufficient; or sometimes a tetanic condition supervenes. Neither the maternal nor infantile statistics give much encouragement toward allowing nature to take her course in these cases.

Susserott found in 147 cases a maternal mortality of 50 per cent. and infantile mortality of 66 per cent. Nauss found a maternal mortality of 54 per cent. in 225 cases, and infantile mortality of 57 per cent. in 117 cases, and in Lefour's statistics of 300 cases the mortality of delivery by natural passage was 25 to 35 per cent. for mother and 77 per cent. for the child. Pinard, however, presents a more favorable series of fifty-four cases in which labor was spontaneous with mortality of 3.6 per cent.

As said before, each individual case must be studied and the conscientious physician thus determine whether the interests of both mother and child are best conserved by a radical or a conservative policy. From my own experience I feel convinced that supravaginal hysterectomy is the operation of choice in those cases in which the growth is of sufficient size to interfere with labor or shows evidence of degenerative changes.

127 NORTH TWENTIETH STREET.

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## PRIMARY ADENOCARCINOMA OF THE BODY OF THE UTERUS, WITH SPECIAL REFERENCE TO AN EARLY DIAGNOSIS.

BY

CHARLES NELSON BALLARD, M. D.,

Lately Associate Professor of Gynecology and Clinical Gynecology at College of Physicians and Surgeons (Medical Department of the University of Illinois); Surgeon to Marion Sims' Sanitarium, Chicago; Attending Surgeon at West Side Hospital, Chicago; Attendant in Gynecology at the West Side Free Dispensary.

Oklahoma City, Oklahoma.

(With four illustrations.)

IN writing this paper it is very vividly brought to my mind that at a recent date I reported a study of the same subject. This subject, however, has been an impressive one to me and I have been compelled by sheer necessity to make a special study of it. These cases have come to me so frequently with an incorrect diagnosis that I have been impressed with the need of further investigation to discover some means to secure an earlier recognition of the condition, so that many lives may be saved that now are sacrificed.

This should be of especial interest to the medical man in general practice, for it is for him to make an early diagnosis. It is a fact that usually these cases come to the physician late in the progress of the disease, yet how many times do they come, saying that they are flowing too much or that they have a profuse leucorrhea, and we advise them to take a vaginal douche for the leucorrhea, or to keep quiet for the bleeding, or prescribe some hematic remedy, and tell them that they will soon be better.

If the patient is at the age of the menopause, we tell her that is what she might expect at that age, and do nothing for her, only ask her to be quiet at such times, and that after the change she will be all right. This is gross carelessness. We should at least make a vaginal examination and exclude that condition so prone to produce malignancy—lacerated cervix. If the cervix is not lacerated, is it eroded; if neither condition exists, then

is there tubal or ovarian trouble? Examine into the consistency of the organ; is it soft or hard, irregular or smooth, is it normal in depth and position; is it movable in all directions; is it tender to pressure, is pain elicited on motion?

After all these means are exhausted, and nothing is found, do not be satisfied; if the hemorrhage continues to be frequent and profuse, go further, and do a thorough curettage and examine thoroughly all scrapings microscopically.

After doing all this, if the hemorrhage still persists, we are warranted in advising a hysterectomy. Even after this is done, we may not be able to discover any lesion macroscopically, but by examining carefully every part of the uterus microscopically, we will finally discover that there exists an area of malignancy. If we had neglected this condition until it could have been diagnosed macroscopically our patient would have been past help, and another life lost that might have been saved by careful investigation, which it is our duty, as physicians, to make.

Many times I have been scored by colleagues for what they term radical procedures in doing a hysterectomy, when the apparent symptoms to them did not warrant it.

Investigation in this particular line has been so gratifying to me that I am willing to be scored for what I can very properly term conservative life-saving work, when I can and have so frequently demonstrated that my diagnosis *was* correct, and that my conscience was clear, knowing that I had saved a life that must have been lost in the hands of the so-styled *conservative(?)* surgeon.

Should we remove a uterus at the age of fifty years, and after a thorough investigation find that no malignancy existed, what serious harm has been done? It has served its time of usefulness; it is not normal, or it would not present abnormal symptoms, such as would bring the patient to us asking our advice. Then why not remove it, and stand on safe ground, rather than wait till we are absolutely sure of the gravity of the case, when, oftentimes, it would be too late to operate? How much better to *err* on the side of safety to our patient than to neglect a case suffering with the most dreaded of all diseases.

You may say, why not do a curettage for diagnostic purposes? Because, not finding malignant cells in the scrapings would not be proof that malignancy did not exist, as can be seen by some of the cases reported. Yet it is our duty to do a curettage in these cases, for, if thoroughly done, it may reveal the source of

the symptoms. Specimens taken from one of my cases reported herein were diagnosed as four or five different pathological conditions, by as many expert pathologists. How this could occur can be understood, when we know that this disease advances by stages, and that each stage shows a different appearance; different fields may contain squamous cells, columnar cells, giant cells, lymphoid cells, or much degenerated interstitial tissue, so any of these conditions might lead to a diagnosis, and the most important one—malignancy—be overlooked.

According to Billroth, we may class all the tumors of the uterus which are of a typical epithelial formation as "carcinoma epithelial, and carcinoma glandular." Virchow says that "in organs which are disposed to secondary growths, primary growths are rare." How seldom secondary growths involve the uterus, even when the primary growth of other organs is widely extended!

The growth of cancerous tumors is at the expense of the surrounding tissues. They have a double food supply, they absorb the nutritious element elaborated for the healthy normal tissues and they destroy in some unknown way the tissues themselves for their own maintenance. Benign tumors are simply new formations displacing adjacent normal tissues.

When we speak of cancer we must not always expect it to appear the same, either macroscopically or microscopically. Every organ seems to have its own peculiar form of cancer, and the uterus is no exception to the rule.

In many examinations of varied specimens of carcinoma of the body of the uterus, we find it developing progressively through stages, beginning with adenoma and passing through bizarre forms of evolution of the uterine glands, into ordinary spheroidal celled carcinoma. These changes may take place in rapid succession, or one stage may persist for some time, and then from some irritation, mechanical, chemical, or otherwise, progress rapidly to the completion of atypical malignant cells. We may observe the growth at any changing point and hence see many forms and characters of cells. Usually the most advanced stages can be seen in the oldest and deepest part of the growth, while in the growing portion the earlier stages are seen.

It is not at all an easy matter to distinguish the tissues undergoing the change into malignancy. Hence we advise much study to be given any specimen, and many specimens taken from the portion of the tissue to be studied. It requires much

time to make an accurate and safe diagnosis in these cases. Hurried and careless examinations are fruitful of serious error.

A marked increase in the gland-like spaces is an important feature in malignant adenoma and adenocarcinoma. We cannot consider this as a point of positive diagnosis, however, for it often occurs in endometritis. Yet in the latter condition the superficial portion of the mucous membrane contains but few glands, hence a marked increase in this region would be considered as suspicious. A marked subdivision of the glands points toward malignancy, while in endometritis the division is limited. In typical malignant adenoma the glands are so close together as to be separated only by a single row of connective-tissue cells. In malignancy the glands run in various directions, while in simple endometritis they run vertical to the surface. They are so increased in malignant growths that they form a complex network, in which it is impossible oftentimes to distinguish them, while in endometritis they can be distinctly outlined.

Cancer in the body of the uterus must arise from the gland or from the surface epithelium. When it begins from the surface epithelium, the layers increase, crowding of cells takes place, until we have a change in the shape of the normal columnar epithelial cell into an atypical squamous cell. These cells sometimes become dry and scaly. This condition is known as *ichthyosis uteri*. Groups of cells in the older portions of the growth undergo a hyaline change; the nuclei become changed, they become swollen, stain less deeply and more diffusely than usual, and break up into fragments and granules. These cells arrange themselves into nests, presenting the appearance of the pearls so characteristic in typical squamous epithelioma. All the intervening stages can be followed sometimes from adenocarcinoma to the imitation of the pavement-celled epithelioma. Cancer in the body of the uterus cannot be recognized as early as that of the cervix or the vagina, but by close observation of the symptoms it can be sufficiently early detected to promise a very favorable prognosis. The progress here is not so rapid as in the cervix, hence much more amenable to treatment. This disease is not confined to parous women, for many times virgins are found afflicted.

Being a newgrowth, the parts are more or less thickened. The breaking-down process, commencing sooner or later, affects all tissues. The ulceration in carcinoma has no anatomical

boundary nor any defined limits. As an example of the difference between healthy granulation tissue and that of beginning carcinoma, we refer you to these conditions of the cervix. There the granulations of an ordinary erosion are separated from one another by sulci, uniform in disposition, and never presenting any appearance suggestive of sloughing, but when the cancerous growth is beginning to break down it looks as if it had been scratched, perforated, or worm-eaten.

Herman says, in the *British Medical Journal* of 1894, that the microscope, as usually used, is not a safe instrument for diagnosis in these obscure cancers in the body of the uterus, for a small portion taken from some part of the organ and examined is most likely to be productive of an incorrect diagnosis. For an accurate diagnosis, sections must be taken from every part of the organ for examination. It is well in discussing the diagnosis of carcinoma of the uterus to consider the anatomy of the growth, for it is only in this way that we can distinguish carcinoma from the other malignant growths of the uterus.

Waldeyer says that carcinoma of the uterine body always originates in the preexisting pure epithelium. The epithelial newgrowths in which are found the glandular tubes with a lumen are distinguished as adenoma, while by carcinoma we mean those epithelial newgrowths whose characteristics in form, size, and grouping deviate entirely from the normal epithelium, so that carcinoma is to be understood as an atypical epithelial neoplastic growth.

The cause of carcinoma is, so far, unknown. It might be of interest, however, to note some supposed predisposing conditions. Statistics lead us to believe that any condition that lowers the vitality of the endometrium is a predisposing cause. As an example, the presence of a fibroid tumor in the wall of the uterus.

Pequand says that usually there are about six times as many cases of carcinoma of the cervix as of the body of the uterus, but when there is present in the body of the organ a fibroid, then the cases are about equal; hence from this we would conclude that the presence of a fibroid in the body of the uterus would be a predisposing cause.

A fibroid in this position keeps up a constant and prolonged irritation, interferes with the circulation, causing a high degree of congestion, a chronic glandular endometritis, followed by adenoma; and, in turn, this may be followed by adenocarcinoma, by regular and then irregular proliferation.

The traumatic theory is given much weight by many clinicians. A single traumatism is probably of little consequence, but an injury that continues to keep up an irritation, such as laceration of the cervix, or the irritation from pipe-smoking where we so often find epithelioma of the lip, or the carcinoma of the scrotum and limbs of chimney-sweeps and paraffin workers, would seem to show that the effect of chronic irritation may be important.

Through the courtesy of Dr. Arthur S. Jackson, of Reno, Nevada, the attending physician, I am able to report a case that demonstrates most clearly the necessity for careful and conscientious investigation.

Mrs. R., age fifty-one, married thirty-four years, occupation, housewife. She has given birth to five children and has had five miscarriages. The last miscarriage was at the age of thirty-six and was caused by a fall, when gestation was between two and three months. Since this time she has given birth to two children at full term, one of which was an instrumental delivery. During the last gestation, which occurred at the age of forty-three, the patient complained of considerable pain in the left side, which continued at intervals after confinement. These attacks of pain came on more frequently and more severe until the time of operation.

She reports that menstruation was more profuse about five years ago. She suspected menopause at this time, but the flow returned to a normal condition, and remained so until May, 1907. After this latter date it was quite irregular until June 15, 1908, when a profuse hemorrhage occurred with severe pains in the uterus and the left ovary. In March, 1907, the patient was attacked with severe pains (rheumatic in character) in the lower limbs and shoulders, accompanied by swelling of the joints and considerable impairment of motion. Melancholia developed to a marked degree, with causeless crying and dread of impending helplessness. She lost twenty-four pounds in weight during the last year. A profuse vaginal discharge has been constant, dark in color, and had a very disagreeable odor. This patient had consulted several well-known physicians, all of whom gave her some remedy for her rheumatism, passing her complaint of profuse leucorrhea and repeated hemorrhages practically unnoticed. They did not even make a vaginal examination, simply considering it a case of you-will-get-well-after-menopause, and allowed her to go at that.

She failed to get relief from the treatment given her, and hence, as is usually the case, she continued to go from one doctor to another, till she did find one who made a more careful examination and discovered the source of the trouble. He continued the examination externally and per vagina and rectum until he discovered enough pathology in the pelvis to produce all the

symptoms complained of, and to lead to more grave conditions if not attended to in due time.

The findings were as follows: in addition to the rheumatic pains, tenderness was found in the left iliac fossa; the left ovary was enlarged and tender; the cervix was lacerated, enlarged, and hard; the body of the uterus was slightly enlarged and its motion somewhat limited; in consistency it was practically normal and the surface was smooth. The urinary examination showed nothing of special value. The gravest pathology was considered to be in the body of the uterus, and in view of the age of the patient, her history and symptoms presented, it was thought most likely malignancy, and removal of the organ was advised.

I was called in consultation, confirmed the diagnosis and earnestly advised the treatment suggested. She entered the hospital July 15, and two days later we did an abdominal hysterectomy (my operation of selection in cancer of the uterus). Under inspection the ovaries were found to be enlarged and cystic. They were adherent, being the cause of a slight fixation of the uterus. The uterus was more closely examined, and was found to be a little larger than normal and harder in consistency. The blood-vessels in the broad ligaments were in a varicose condition, which I find is rather common in these cases. The patient stood the operation well and made a very satisfactory recovery, leaving the hospital in two weeks. At the time of leaving the hospital she had regained her lost motion almost entirely, and is more free from pain than she had been for fifteen months.

She is now, three months after the operation, free from rheumatic pains and has complete motion. She is gaining in weight and strength and says that she is in every way a new woman. Immediately after the operation was completed the uterus was incised and a macroscopical examination made. No special pathological condition was to be seen. The gross specimen was given to a local pathologist with instructions to make sections and drawings to show the condition of the endometrium, if it existed there, that would produce the symptoms found at the original examinations. The case was reported by Dr. Jackson at a meeting of the Washoe County Medical Society, and in addition to his report the pathologist was asked to give his microscopical findings and show by his drawings what he had found. He demonstrated some glands from the cervix and body of the uterus whose orifices were patulous and whose lumen contained many blood-corpuscles. The intervening tissue was undergoing degeneration. The walls of some blood-vessels were thickened while the lumina of others were entirely obliterated. His conclusion was that the organ was undergoing degeneration, not at all uncommon at this time of life, and that the symptoms were those frequently found at this age. His investigation was concluded with this amount of superficial examination and the case reported as one of not uncommon occurrence. I was not satisfied to allow the case to go without a more thorough search-

ing for the cause of the symptoms. I was able to interest in this investigation Dr. A. W. H. Wulschlager, of Reno, Nevada, surgeon U. S. Army and pathologist, and Professor Fransden, pathologist at the Nevada State University, and it is to these two experts that I am indebted for the following pathology:

The dimensions of the uterus were 7.5 by 4.5 by 3.5 centimeters. The left ovary was enlarged, cystic, adherent, and slightly prolapsed. The veins in the broad ligaments were extensively varicose. No abnormal condition could be noticed in the endometrium. The cervix was lacerated and erosions were abundant on the everted surfaces. The uterine wall was thicker than normal. Microscopical description. The uterus was cut into many small pieces, distributed over the body, fundus, and cervix. For convenience of description we will

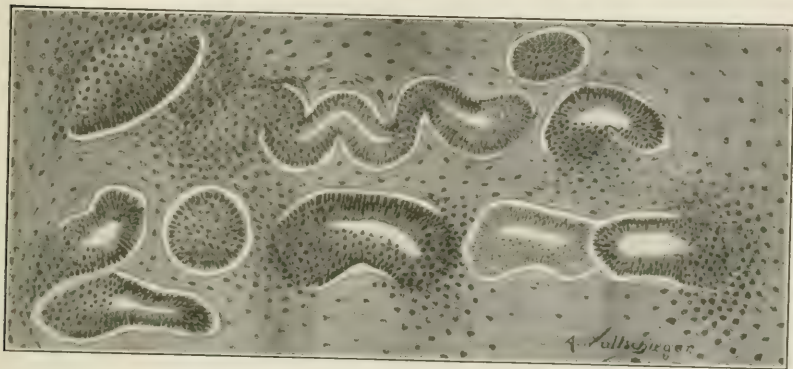


FIG. 1.—Showing early invasion of glands of fundus.

divide it into: 1. Mucosa. 2. Glands. 3. Muscle and connective tissue. 4. Blood-vessels. 5. Malignant area.

*Mucosa.*—The microscopical findings showed that the mucosa in the regions extending from the median line of the fundus to a little below the right ostium tubæ, was in many places devoid of epithelium. As we neared the cervix the epithelium became more normal, being but little disturbed one centimeter above the internal os. The mucosa of the cervix was practically normal except in a few spots where there was much crowding and some displacement of cells.

*Glands.*—The uterine glands were crowded so closely together in some regions as to displace almost entirely the connective tissue which should separate them. In many places the epithelial cells lining the glands were so crowded that they were pushed out of place, becoming stratified and occupying the lumen of the gland. In other places the basement membrane was broken down and the cells were found nesting in the position normally occupied by connective tissue. This latter process had taken

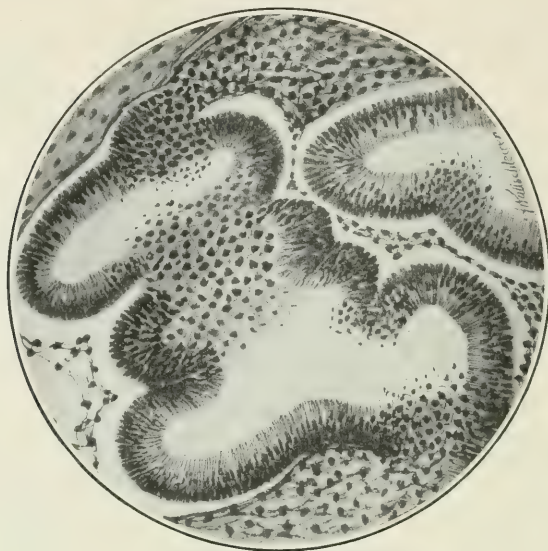


FIG. 2.—Early adenocarcinoma of fundus

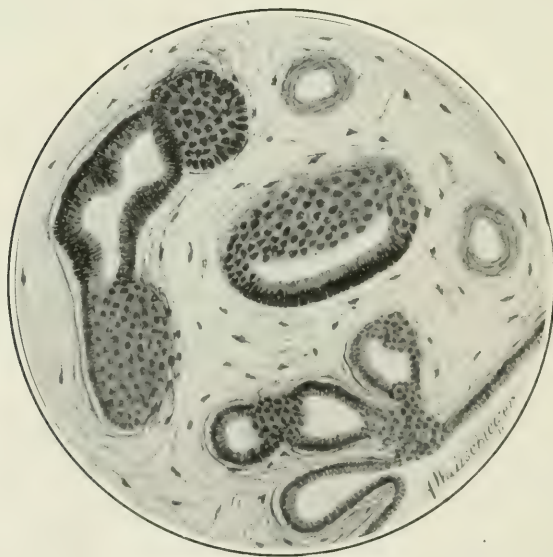


FIG. 3.—Very early disturbance of the columnar epithelium of the cervix (secondary invasion).

place so extensively in certain regions of the fundus that the interstitial tissue has been wholly destroyed and its place occupied by many-layered, irregularly-shaped epithelial cells. These were atypical squamous epithelial cells, formed by the process of metaplasia.

Figs. 1, 2, 3, show different stages of this process.

*Muscles and Connective Tissue.*—The muscular tissue, in places, was replaced by a superabundance of connective tissue. In other regions the fibers of both tissues were broken and irregular. In these spots the connective tissue contained but few nuclei and was undergoing degeneration.

*Blood-vessels.*—The blood-vessel walls were thickened and many had occluded lumina. This was especially marked as we came near the malignant area.

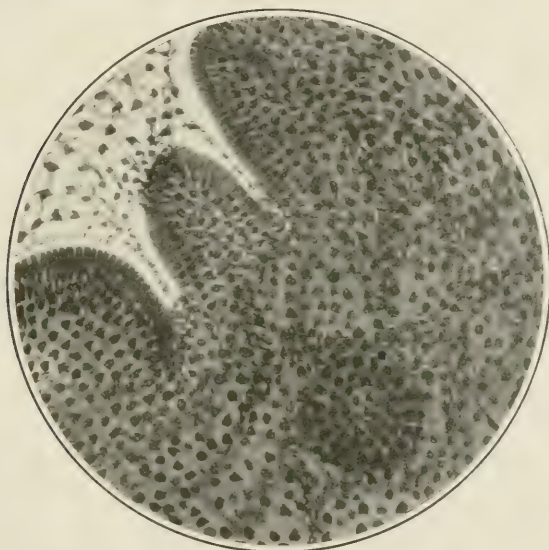


FIG. 4.—Invasion of connective tissue by malignant cells, more advanced than Figs. 1 and 2.

*Malignant Area.*—The carcinomatous area was limited, practically, to the fundus, while in many sections taken from the cervix, an occasional view could be had of cells of whose malignancy there could be no doubt. The changes in the cervix were not so advanced as in the fundus, showing plainly that the disease was primarily that of the fundus, with secondary invasion of the cervix. In the fundus nesting of the cells was observed. In some masses the cells contained long nuclei; while others were made up of cells with a large amount of protoplasm and round nuclei. These were squamous cells. Karyokinetic changes were to be seen as well as nuclear clumping. Cells with granular nuclei were plentiful. But few giant cells were noticed. No

pearls were found. Squamous cells, columnar cells, and cells containing the comma nuclei, all found in this specimen, would represent some of the changes which take place in the process of metaplasia in the uterine mucosa.

It has been taught by most pathologists, until the last few years, that all cancerous growths of the uterus primarily existed in the cervix, but recent investigation has changed the teaching very materially. It is now known that many cases occur as primary carcinoma of the body of the uterus, and that the cervix may remain free throughout the process of the disease, for it extends most rapidly in the lateral direction.

A second case which I have already reported in another article, I wish to report again here, as it is of interest in this connection. A more detailed account of this case can be obtained by referring to the October number of *Surgery, Gynecology, and Obstetrics*.

Mrs. M., aged seventy years, occupation housework, married fifty years; she has given birth to four children, all of whom are living and well. The births were all normal and convalescence uneventful. There were no miscarriages. Her father died at the age of seventy-nine, with rheumatism; her mother died at the age of seventy, cause of death unknown, but it was not cancer in any form. Patient has one brother who is living and well, and three sisters, one of whom died at the age of eighty-six, with pneumonia—the others are alive and well.

Patient began to menstruate at the age of fifteen, was always regular and normal. Menopause occurred at the age of forty-five, since which time she has never had leucorrhea nor any bloody discharge. She has been free from anemia and cachexia. The organs of nutrition and circulation are normal. Nothing in her family history indicates a hereditary tendency to any disease. In 1901 the patient fell from a street car, alighting in a lateral sitting position, fracturing the neck of the femur. The accident confined her to the house for two years. She was able to walk about with crutch and cane. After she had sufficiently recovered to be about her apartments again, she noticed a different feeling in the pelvic region, a sense of weight. This symptom was slight at first, but grew more severe. She noticed that the recumbent position gave her relief, but no examination was made until the present illness occurred.

In March, 1906, I was called to see her and I found that she had had a profuse hemorrhage following a little extra exertion in attempting to lift a piece of furniture. I made a careful examination and found the cervix and body of the uterus normal in position, size, and consistency, with a normal appearance at the external os. The organ was movable and showed no pain nor tenderness during the examination. The only abnormality noticed was a slight fullness, especially marked on the left side.

Proper precautions were taken as regards the hemorrhage which ceased in a few days and the patient recovered sufficiently to be about her apartments again. But after another little exertion, a second hemorrhage occurred, and a third one within three weeks, the last one being more profuse than the preceding ones. I influenced her to go to the hospital for a curettage for diagnostic purposes. After the usual time for preparation she was taken to the operating-room and anesthetized. A thorough examination was made, and at first I found no more pathology than has been stated above, except possibly a boggy feeling to the side of the uterus. The careful use of the sound showed that the uterus was normal in depth and position. After dilating the cervix, a dull curette was carefully introduced and slowly moved about over the endometrium to detect any abnormal tissue that might be present. At a point on the left side just above the internal os, the curette went through the uterine wall without the least resistance. Immediately there was a gush of blood which continued to flow freely. Not being able to appreciate the situation, and the condition seeming to be one of grave proportions, I at once proceeded to open the abdomen, the patient having been previously prepared for a laparotomy. I found the uterus normal in size and consistency and practically free from adhesion. But the fullness on the left side proved to be a mass of enlarged veins. They were massed so closely as to constrict somewhat the movements of the uterus. They were very much crowded together in the wall of the uterus as well as in the broad ligament. The point of the closest contact seemed to be at the point of the perforation. While doing the hysterectomy the position of the perforation was easily seen, and that it extended into the venous mass was most plainly shown. This demonstrated that the source of the hemorrhage was from the varicose veins. My firm conviction is that the perforation was due to the degeneration produced by the varicosity. A careful examination was made of many sections taken from different parts of the body and cervix. The cervix and the region of the perforation were found to be free from malignancy, while the fundus proper showed unmistakable evidences of malignancy.

I wish to quote from a few of our most eminent authors, giving their ideas as to the slowness of the growth and the importance of an early diagnosis. S. J. Cameron, *London Lancet*, 1905, says, "Carcinoma in the body of the uterus has an undoubted tendency to form in fibromyomatous uteri not from the tumor, but from the uterus itself." In most of the pathological specimens examined by him the growth has been diffuse. This was probably due to the fact that the patient had delayed too long in seeking relief. It is difficult to distinguish adenocarcinoma from these cases. Pain is a fairly early symptom in carcinoma

of the body of the uterus, but cases are not infrequent where pain is absent until the growth is far advanced.

Thos. S. Cullen, 1900, reports the following case: Patient aged thirty, pain in the lower left abdomen, extending into the leg. The ovary was removed and the uterus suspended. She left the hospital much improved. She was readmitted one year later complaining of uterine hemorrhage. A curettage was performed and the scrapings revealed the presence of adenocarcinoma. The patient refused operation and left the hospital. She was readmitted seven months later and a hysterectomy done. An examination was made of the uterus and appendages. The squamous epithelium of the cervix was unaltered. The uterine mucosa was practically normal, except some glandular hypertrophy. A diagnosis of adenocarcinoma was made. The underlying muscles were only slightly involved. Sections taken through the outer part of the wall showed no pathological change. This case shows clearly the slowness with which adenocarcinoma of the uterine body may advance.

A. Monte, of Paris, 1904, says, "The cancers of the body of the uterus, although pathologically identical with these of the cervical canal, are differentiated by the slowness of their evolution and, in consequence, by their benignity."

H. Banga reports a case in the *American Gynecological and Obstetrical Journal*, of 1899, as follows: Patient's age, forty-five, irregular vaginal discharge of blood. An examination showed no enlargement of the uterus; there were no nodules; the body was soft and the os, to all appearances was healthy. Examination being impossible, curettage was decided upon. A diagnosis made from the scrapings showed glandular hypertrophy of the mucous membrane with no signs of malignancy. An examination two months later showed no change. Bleeding still continued, making us believe that malignancy must exist. There was no pain felt at any time by the patient. Hysterectomy was advised and done, and a careful examination was made from sections taken from all parts of the uterus, and malignancy found in the fundus, diagnosed as adenocarcinoma.

Beyea reports a case in the *AMER. JOUR. OBST.* in 1896. The patient was thirty-eight years of age; the only symptom was hemorrhage from the uterus. Hysterectomy was advised and performed. Microscopical examination was made of sections taken from the cervix and body of the uterus. Malignant adenomatous changes were found in the corporeal endometrium, while the cervix was perfectly normal, except a condition of cervical endometritis.

Offergeld, in "Archives of Gynecology," 1906, reports a case:

Patient was fifty-four years of age. Her only complaint was a copious bloody discharge from the uterus. She complained of no pain. A curettage discovered a glandular endometritis

with some suspicious places. Four weeks later a complete hysterectomy was done. The uterus was enlarged to the size of a fist, and the cavity was filled with a bleeding tumor mass. The parametrium was free. A microscopical examination showed the usual picture of chronic metritis with numerous newgrowths of connective tissue. In the mucous membrane the glandular formation was insignificant. Farther on the tissue was penetrated by carcinomatous cells. Diagnosed as adenocarcinoma of the fundus.

A case reported in the *Bulletin* of Paris, in 1898, is as follows:

Patient's age, fifty-eight. She had a previous operation of a uterine polyp that had been easy of removal and favorable. The discharges, bloody and leucorrhœal, did not cease as expected, and the patient came again for examination. On examination, no adequate cause could be discovered for the metrorrhagias, but there was a suspicion that the discharges indicated a form of vegetating polyp that had escaped the previous examination. Curettage was performed. A small mass was expelled from the uterus the size of a hazel-nut; this showed the presence of rows of epithelium in a gangrenous tissue. Hysterectomy was performed, and on examination the body of the uterus was found filled with growths of whose malignancy there could be no doubt. Anatomically, the cancer had not passed the isthmus, but was confined to the body of the organ. The size of the uterus was normal. The tumor represented a type of latent evolution. Without the discharge its presence would not have been suspected.

In short, the absence of pain and the normal size of the uterus would have prevented the patient from benefiting by any intervention, if the discharge had not sounded the alarm and the microscope allowed the correct diagnosis.

I have cited the foregoing cases, from various noted pathologists of different parts of the world, to show that they, too, would advise hysterectomy with seeming masked symptoms in these cases. There are three symptoms that are to be looked for: profuse leucorrhea, hemorrhage, and pain. The later in life, the more grave these symptoms are considered, but the disease is not confined to the aged alone. It is not necessarily true that we must have all these symptoms in every case, for pain may be absent entirely. Leucorrhea is the earliest symptom to be looked for, and this, if profuse, is sufficient alone sometimes as an early symptom. This latter symptom should always be regarded as suspicious after menopause.

If there exists a persistent metrorrhagia a curettage should be done for diagnostic purposes. It should be thoroughly done, as if for a cure of the symptoms. A searching microscopical examination should then be made of the scrapings. If the condition

be only one of fungoid endometritis, from which a differential diagnosis cannot be made, it will more than likely result in a relief of the symptoms. If the examinations do not show malignancy, and the symptoms continue unabating, then advise the radical procedure. A thorough microscopical examination of many of the sections taken from various parts of the uterus should be made. You will usually be rewarded for your extra work by finding the cause of the trouble to be a latent or beginning malignancy.

I might report many more cases of my own and other operators, but these given will suffice to make clear the slowness of the growth in the body of the uterus, and the importance of our more closely observing the few symptoms that do present themselves in order to make an early diagnosis and enable us to act in a radical way in time to make a favorable prognosis possible.

In the microscopical drawings I have tried to select those fields that would demonstrate most clearly the different stages of the progress of the disease, from the earliest disturbances of the normal columnar epithelial cell to that of atypical stratified pavement epithelium, showing a tendency to extension of the epithelial infiltration beyond the acini. In places the excessive epithelial proliferation showed itself in the form of new acini of irregular character. This is typical of adenocarcinoma.

#### CONCLUSION.

1. It is all-important for us to consider a profuse leucorrhea or hemorrhage after menopause as serious.
2. We should not be satisfied to allow nature to take its course when these symptoms persist, even if a curettage does not show malignancy.
3. Metastasis is less frequent in carcinoma of the corpus uteri than in cancer of the cervix, hence the former is more amenable to treatment.
4. An early diagnosis made, a complete hysterectomy done, a favorable prognosis can be given.

## A CASE OF PSEUDO "VIABLE ABDOMINAL PREGNANCY."\*

BY

SHELBY C. CARSON, A. M., M. D.,

Greensboro, Alabama.

THAT we should profit by our mistakes has been long taught, but the fact is not commonly realized that an honest error in diagnosis is of more genuine advantage to the one making it than is the smooth, even, successful issue. It is on the same philosophical principle that "The man who fails is worth ten fellows that never try." When there is time, as is often the case, for study, consultation, and investigation the incentive draws forth our energies, quickens our perceptions, and makes us keenly alive to the responsibilities resting upon us. All avenues of information are greedily sought, explored, and digested, and as a result a wonderful fund of knowledge, which perhaps would have otherwise escaped us, is treasured up for future service. Therefore, so long as our patients do not suffer, instead of being cast down and discouraged, we should regard our painstaking errors as "Apples of gold in pictures of silver."

The error in diagnosis that so exercised my thoughts for some time was along the line of *abdominal* pregnancy. As the matter has long since terminated in the outflow of an excessively large amount of liquor amnii and the birth of a twelve-pound infant *per vias naturales*, it probably should be considered a "closed incident" were it not that it is still a puzzle as to why there should have been any mistake at all, and that it was the means of instructing the writer on some points that may be of interest to others. It is only a reasonable inference that one who had enjoyed a fair portion of general practice for a long term of years was, at least, ordinarily posted in all pertaining to *normal* pregnancy, while, on the other hand, quite an unusual experience in extrauterine pregnancies prevented his being a novice in such cases. Your attention is called to the fact that it is viable *abdominal* pregnancy—not that very common form, the tubal variety—now under consideration. And this brings up the first interrogation in my mind. Are all cases of extrauterine preg-

\* Read before the Southern Medical Association, New Orleans, Nov. 12, 1909.

nancy compelled to take place where they will give pain at period of rupture?

In the present instance the only break apparently in the chain of symptoms was the absence of pain at any time. I reasoned that as there had been no pain—sudden and acute—there had been no rupture, and if all cases were of necessity at first tubal then this could not be extrauterine.

Williams, in his work on Obstetrics, says: "The great majority of abdominal pregnancies were secondary in character, having resulted from ruptured tubal pregnancy." I had only a few months previously opened the abdomen and amputated a badly ruptured tube for a lady whose life was saved by the projection of the placenta from the tube into the cavity of uterus, thereby rendering this patulous for the free drainage of the macerating fetus and secundines. As an analogy I argued that at the other end of the tube—in the meshes of the fimbriæ—conception might occur and adhesions gradually and imperceptibly, as it were, fasten themselves without pain upon the pelvic contents. In a very few days after the first examination of my patient I attended the Atlanta session of this association and took occasion to consult gentlemen of prominence on the point of pain at the inception of all cases, and was assured that it was *not* an element necessarily.

If any known method of determining a diagnosis was omitted, save that of etherization, I am ignorant of it, and there was no apparent excuse for anesthesia. Opportunities for examinations were not lacking. I suppose she submitted to a rigid search at six or eight different periods, and at one time I made it convenient to compare her on the same day with two other patients who were normally pregnant and at the same period in their term.

Consultation was positively and repeatedly denied me. Had I availed myself of anesthesia it would have eliminated one of the remarkable coincidences that go to make up this peculiar case. I refer to an extreme tenderness or sensitiveness to the touch—enough to make the patient complain bitterly—something that does not ordinarily obtain, but, strange to say, is mentioned by men of experience as a prominent symptom of ectopic gestation.

It was this that delayed—till a much later period—a resort to that valuable aid to diagnosis mentioned by Werder, of Pittsburg, viz.: the thrusting of the finger-point through the softened and usually patulous internal os—a safe procedure. An ad-

vanced case of abdominal pregnancy should present no really difficult features in diagnosis. The very irregular outlines of the tumor—its angularities, so to speak; the very sensation conveyed to the hand by touch and motion as though it were immediately under the abdominal skin; the ability to grasp with the finger-tips a knee or an ankle and move it freely to and fro; to hear the heart sounds just beneath the ear; to trace by palpation without hesitancy the bony leg, the flaccid abdomen, the firm chest-wall, and locate the head in the lower pelvis; then with the finger, *per vaginam*, easily map out the sutures and fontanels just through the mucous membrane of the vaginal fornix and by a little pressure get the characteristic resilience of the cranial bones; to find the cervix soft and patulous, the uterus slightly enlarged and separate from the tumor—should furnish ample ground for a conclusion. Possibly it may be an exaggerated picture of a *genuine* case and yet to an eminent degree were all these factors present in my case, which was *not* a case, with the exception of the uterus being distinct from the the tumor; though on one occasion with the examination, having in view this point alone, I was fully convinced that it *was* separate. In addition to this the mother—an intelligent, refined, healthy woman of twenty-eight years—noticed that the movements of the child at night "were just beneath the bed clothes: so different from her former pregnancy." I confess that I would have made my diagnosis from the examination through the abdomen alone. However, notice that even the history is calculated to confirm the error. The patient had aborted her first conception at two or three months—said to have been a "fleshy mole." Her second pregnancy (with twins) terminated at full term with general edema, convulsions, forceps delivery, loss of one child. Her first menstrual molimen after this occurred about the twelfth month; then at irregular times—sometimes missing two months in 'succession—until she finally missed entirely in June, eighteen months after the birth of the twins. When she was five months pregnant she was sent to me by her regular family physician for a diagnosis, bringing from him a letter calling my attention to the slight enlargement of the uterus and the open condition of the os.

Only after I had thoroughly investigated by many avenues of information did I learn that there *are* rare atypical instances of normal pregnancy when the uterine walls are as thin as paper, when the lower third of the uterus is firmer than the other por-

tion—so simulating extrauterine pregnancy—that the nicest discrimination is required to differentiate between the two.

When to operate is a mooted question among the best of men. At the first blush the arguments in favor of an immediate section strike me very forcibly. For instance: the mother, having our first consideration, having already undergone several months of burden-bearing, will still be compelled to endure a gradually increasing burden, will have added to this the mental anxiety which a knowledge of her precarious condition would naturally engender, besides the actual danger to life from a constantly dreaded rupture, will be forced to submit herself to a rigid surveillance by a competent surgeon. Again, her strength has not been exhausted and therefore she is a better subject for operation. The fetus is not so well developed, the sac has not its most extensive adhesions and enormous ramification of blood-vessels; therefore the danger from hemorrhage is not so great. Notwithstanding this seductive line of thought, my instinctive abhorrence of a destruction of the fetus together with the great desire to bring into the world a living child saved me from an early operation which, in the light of the final denouement, would have been, to say the least, rather embarrassing. Since the subject of a living child has been broached, it might be of interest to further inquire into the advantage to be gained, even though it were practical under the circumstances. How long will it survive and how will it rank in the "survival of the fittest"? It is a well-established fact that the products of such pregnancies are almost uniformly feeble, maimed, deformed little specimens of humanity that perish in a brief time. Of necessity statistics are meager. I have knowledge of only one authority—Sittern—who states that out of 122 births of this nature only sixty-three survived the first month. Of three cases reported by Werder, of Pittsburg, one case only lived to the fourth day. At least one living adult has reached the age of twenty. All of Werder's were badly deformed. My personal experience as to deformity is confined to one case—an autopsy. I saw this mother one week before her death from sepsis and made a correct diagnosis as revealed by autopsy. This was something over ten months from her time of conception. The child, as I raised it from a pool of pus, struck me as remarkably well developed. Some years subsequently I removed all the bones of the skeleton from the abdomen of a negress who dated her pregnancy fully three years from that time. The bones indicated no deviation

from the normal. Nevertheless, the fact that a deformity so frequently exists is attributable to several obvious reasons, such as the absence of the protecting walls of the uterus and the substitution of those of the relaxed pendulous abdomen; that it is so exposed to pressure from external sources as well as of the internal organs; that in the last months the amniotic fluid is to a large measure absorbed.

Some surgeons have allowed the latter reason to induce them to operate at seven and one-half or eight months, but experience has taught that the feebleness of the infant at this early period more than counterbalanced the gain. So in deciding upon the *time* to operate, even with this slim expectancy, the child has some demands upon us, especially as the mortality is not increased to any marked degree by waiting. In my own mind after due deliberation the conclusion was reached to await the completion of her term. The only danger to the mother would arise from a secondary rupture of the sac which, as I had seen a negro woman when fully seven months pregnant in this abnormal manner making an active hoe-hand in the field without accident, I consider rather remote. Sittern estimates this secondary rupture at something like 7 per cent. Strange to say, and yet not so strange either because it was the only source of fear to myself, the uncontrollable hemorrhage which may result from an effort at separating the placenta from its attachments has forced a limited number of surgeons to await the death of the child, even two or three months afterward, when the placental circulation is destroyed and the large, frightful vessels are thrombosed or obliterated.

Being thoroughly conscientious in the whole matter and correspondingly impressed with the magnitude of the responsibility resting upon me, I had consulted several of the most prominent men in the profession throughout the States and had definitely marked out my plan of procedure. The patient, closely watched in the interim, was to enter the sanitarium one month before her time. At the first approach of labor she would be prepared as for any other capital operation. The contemplated incision through the walls, the rupturing of the sac and the escape of a small quantity of water, the clamping of the cord with forceps and the extraction of the child created no apprehensions, but it certainly did appall me when I thought of encountering a placenta and sac with unknown and uncertain attachments, possibly covering the uterus and tubes, the broad ligament,

even the bowels themselves, filled with vessels approximately the size of the finger and liable to exsanguinate the patient within the briefest time.

Those who have experienced the rush of blood in a severe placenta previa can form a slight conception. Therefore I pondered well the three different methods now employed, and tried to devise others.

The first, that of taking on a state of "innocuous desuetude" and awaiting the death of the child, was discarded at once as being surgically untenable because it surely denied life to one and subjected the other to the gravest danger through absorption of the decaying fetus. Having once opened a mother who lost her life in this way and viewed the half gallon or more of pus in which the child, not yet touched by decay, was lying, there was no temptation to adopt this course. The other extreme, the radical operation, attacking the entire attachments and separating them *in toto* appeals strongly to the surgical sense, because the abdomen can then be closed at once without further apprehension; but unfortunately certain contingencies arise that prevent the boldest and best surgical skill from accomplishing this desired termination. For instance: the nearer you approach the placental site the greater the danger. This placenta is supplied mainly by the ovarian and uterine arteries. Of course the first thought is to securely clamp these vessels. But suppose the placenta is attached over the entire surface of the uterus, the tubes and the broad ligaments entirely obscuring these from view, thereby preventing the clamping of these vessels. Would you risk the compression of the abdominal aorta after the delivery of the fetus? Some would, but I confess, though my personal experience is *nil*, that I would have very little faith in the success of digital or manual compression of such an important vessel and I would be fearful that a metal band, such as that of Halstead, or of clamps covered by rubber would destroy the integrity of the vessel-walls since they would perhaps need to remain for some time. Therefore, taking all these matters into consideration, I had decided to quickly make the incision through the abdominal walls, rupture the sac, clamp and sever the cord near the placenta, pass the child to a nurse and carefully inspect the surrounding conditions. In case the attachments were limited and the ovarian and uterine arteries were accessible I would clamp these and finish the operation by total removal. In case the conditions were otherwise and the

life of the mother greatly endangered by further interference, I would adopt the intermediate course which is practised more often, viz.: the removal of as much of the sac as possible, suturing the remnant to the edge of the peritoneum, closing the upper portion of the wound and introducing gauze drain into the cavity, changing them as became necessary, until the separation of the sac. It is true that I would exist in fear and trembling until it *did* separate, but the danger of sepsis I imagine would be less imminent than the danger of sudden death from hemorrhage in the first instance.

Fortunately for the patient, about two months before her expectancy expired, I was able to feel, with the point of my finger through the internal os, the membranes and the fetal head; then came a relaxation from a nervous strain which doubtless was more gratifying to her than even to myself.

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## ECTRO-HEMIMELIA OF THE RIGHT UPPER EXTREMITY.

BY

JULIO F. ARTEAGA, M. D.,  
Havana, Cuba.

(With two illustrations.)

A CUBAN woman of the lower class, aged forty, with negative family and personal histories, multipara, gave birth to a child



FIG. 1.

perfectly developed except for the absence of the right hand and almost the whole forearm on the same side.

There being no cicatricial or raw tissue in the stump, with

a normal placenta and membranes, and the nondelivery of the missing parts, indicated that it was not a case of spontaneous intrauterine amputation by amniotic bands or faulty disposition

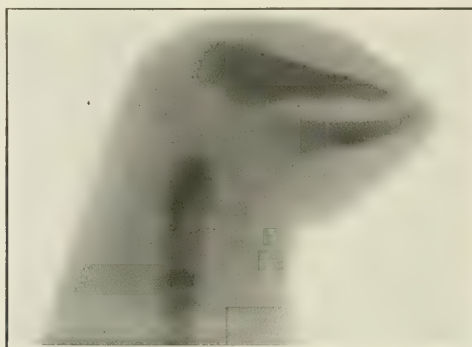


FIG. 2.

of cord, but merely a case of arrest in the development of one extremity.

The radiograph confirmed the diagnosis.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting of December 14, 1909.*

*The President, ROBERT L. DICKINSON, M. D., in the Chair.*

DR. CHARLES CLIFFORD BARROWS presented the history of a case of

### ACUTE COMPLETE INVERSION OF THE UTERUS.

The patient, Mrs. B., a primipara in her fortieth year, consulted me about a year ago because of sterility. Examination showed a markedly retroverted uterus which I restored to its normal position by shortening the round ligaments after the method suggested by Alexander. She soon became pregnant and went to term without an untoward symptom of any kind.

On October 24, 1909, after a normal labor I delivered her of a live child. Low forceps were applied when the head was on the perineum, delivery being somewhat retarded by the rigidity of the soft parts. The uterus contracted well, and I turned the delivery of the placenta over to my assistant, Dr. Henry Pearson, while I was busy getting ready to repair a slight perineal laceration. Before the placenta had been delivered Dr. Pearson

called my attention to the fact that he could no longer feel the fundus. The patient was lying across the bed, with knees flexed, and had just recovered from slight chloroform anesthesia. The placenta was protruding from the vulva, and examination showed as once that the uterus was completely inverted with the placenta attached at its fundus. I detached the placenta quickly, grasped the fundus and carried it well up to its normal position. This was easily accomplished, and the uterus contracted promptly and remained so, the patient having an uneventful puerperium.

I believe it worth while to report this case. 1. Because of the extreme rarity of the accident. Quoting from Edgar's translation of Winckel's Text-book of Midwifery, Denham found only one acute inversion in 100,000 deliveries in the Dublin Rotunda, and C. V. Braun had not a single case in 250,000 deliveries.

2. Because of the uneventful recovery of the patient, the mortality from this accident being usually quoted at from 50 per cent. to 70 per cent.

3. Because of the absolute lack of symptoms. There was positively no bleeding at all, there were no symptoms of shock, the patient made no outcry, and when questioned after the reduction of the inversion, evidently did not realize that anything unusual had occurred.

Her skin was normal, her pulse rate was unchanged, her pupils were not dilated, and there was no anxiety or uneasiness of any kind.

Robert Bell and J. C. Reeve as quoted by Winckel have reported cases without shock or hemorrhage, but Winckel says that these cases are extremely rare.

So far as I have been able to discover in my search of the literature of the subject, no such case as this one entirely devoid of hemorrhage or subjective symptoms of any kind has been reported.

#### DISCUSSION.

DR. DORMAN.—I think the explanation of the lack of hemorrhage was in the complete attachment of the placenta and the prompt reduction of the inversion. About six months ago I delivered a woman the second time, it was her third delivery. The first labor had been a very difficult breech. The second was two years ago, and was a breech presentation which I corrected before labor. At the time of the last labor she came to the hospital again a breech, and I manipulated this fetus the day she was supposed to be at term and made a vertex presentation, this required a little effort and there may have been some trauma to the uterus, but shortly after that she went into labor. It came on very rapidly. The house staff delivered her and by the time I got there they were massaging the uterus for hemorrhage. The placenta had been extracted. We suspected something peculiar. The uterus failed to contract, the bleeding

continued, and on examination I found the condition a complete inversion. There had been no traction on the cord; the uterus had turned inside out. The uterus was replaced, and tamponed for twenty-four hours. She made a good recovery.

DR. EDGAR.—I do not think there are many cases of complete inversion reported which recover. I have had one complete inversion of the uterus. I was called by a physician who telephoned that the uterus had turned inside out. I got there within twenty minutes after the call came. He had hot towels around the uterus for some reason. I gave the patient a little chloroform and replaced the uterus and she promptly died of shock. I think forty minutes would be the outside limit of time before it was replaced. The cause of that inversion was unquestionably a too vigorous application of Credé's method. They waited thirty minutes in this case and then made a very vigorous application of Credé's method; the attending physician said the uterus slipped from between his fingers and then the nurse called attention to the fact that the uterus lay between the thighs of the patient.

DR. VINEBERG.—Some six years ago a patient was brought into Mount Sinai Hospital with a very high temperature. It was twelve or fourteen days after delivery. She was supposed to have a fibroid tumor which was sloughing. There was a putrid mass protruding at the vulva which had a very offensive odor. I began to remove this thing and finally it proved to be a complete inversion of the uterus which had been present since delivery with the greater part of the placenta attached and undergoing sloughing. The temperature was  $104^{\circ}$ , general condition fairly good. I did a vaginal hysterectomy, and she made a good recovery.

DR. DICKINSON.—The Chair would like to add one case of complete recovery from inversion of the uterus; the return of the uterus being immediate and the patient recovering.

DR. BARROWS.—I am particularly interested in the remarks of Dr. Dorman because I was surprised that there was no hemorrhage. This uterus was entirely outside the vulva and the attachment of the placenta could be followed around very easily without any difficulty some distance at least from the woman's soft parts. It was easy to recognize what had taken place, and my effort was to reduce it just as promptly as possible, but it was the first opportunity I ever had to study the attachment of the placenta in the living subject. It was a beautiful attachment; the sloping from the uterine tissue was almost imperceptible. It was without any line of demarcation, but immediately when I found a spot to strip it, it separated without difficulty. Even after the separation of the placenta, there was practically no bleeding. Dr. Dorman's suggestion was certainly the correct explanation. The lack of bleeding was due to the absolutely perfect attachment of the placenta in the whole circumference in this case. There had been no dragging on the cord and very



ENORMOUS FIBROID GROWTH OF THE UTERUS—VINEBURG



little manipulation of the uterus. When I turned the case over to Dr. Pearson I knew the uterus was in good condition.

DR. H. N. VINEBURG presented the specimen and record of an  
ENORMOUS FIBROID GROWTH (23 1/2 POUNDS) OF THE UTERUS.  
HYSTERECTOMY. RECOVERY.

Mrs. H., aged fifty-five, widow three and a half years. Had seven children, youngest seven and a half years old. Menopause seven years ago. The patient had noticed several years ago that her abdomen was large, but she paid no attention to it, inasmuch as she had no pain nor discomfort from it. But of late the abdomen had increased so much in size that its weight alone was causing her some distress. In addition she was beginning to suffer from difficulty in breathing and from a sense of fullness at the epigastrium, especially after eating. She was also experiencing considerable difficulty in the movement of her bowels. It was these subjective symptoms that induced her to consult her family physician, Dr. M. Katzenberg, who kindly referred her to me.

I found the patient looking older than her stated age, and with her abdomen enormously distended as if she were carrying triplets. The tumor reached the ensiform cartilage and the lower border of the ribs on either side, and it gave rise to a great protuberance of the entire abdomen. On vaginal examination the sound was found to pass into the tumor, and the entire pelvis was filled with hard nodules, varying in size from a hen's egg to that of a closed fist. The impression gained from the examination and history was that the growth was of a malignant nature, owing to its rather rapid growth of late, and owing to the manner in which the nodules seemed fixed to the pelvic walls. Still, the patient's general condition seemed good and I was willing to entertain the opinion of the family physician that the growth was a fibroid, and that the patient should be given the chance of an exploratory laparotomy.

On July 19, 1909, I operated upon the patient at Mt. Sinai Hospital. The abdominal section disclosed a huge fibroid filling almost the entire abdomen and pelvis. It was surprising to note what a small space was left for the intestines to occupy. The operation offered many technical difficulties, owing to the great size of the tumor and the numerous tortuous and greatly dilated blood-vessels.

The patient withstood the operation remarkably well, and were it not for a rather troublesome bronchitis no convalescence from a laparotomy could run a more smooth course. The weight of the tumor after removal was 23 1/2 pounds. The interest in the case is that a woman should carry a large fibroid tumor within her abdomen for so long a time and with comparatively little discomfort, and that it should take on active growth after so long a period of quiescence and after so long a period after the cessation of the menstruation.

DR. BROWN.—At our October meeting I had occasion to present a specimen of very early carcinoma of the cervix of very considerable interest. I brought some slides to show the society and failed to show the little island of epithelioma, and I stated at the time I would request the pathologist of the Woman's Hospital to help me out. At our last meeting the light was not such as to allow the use of the microscope. I will ask Dr. Jessup, the pathologist of the Woman's Hospital, to exhibit these slides to anyone who wishes to see them.

The patient came under my care with a diagnosis of carcinoma of the cervix. The appearance of the cervix was typical of erosion, yet with the diagnosis of carcinoma, I requested Dr. Jessup to make a frozen section of the excised cervix. He failed to get any evidence of malignancy, so the operation was completed in the ordinary way. Three or four days later the pathologist reported the presence of malignancy in minute foci in some of the sections from celloidin hardening. Hysterectomy was done ten days later.

Dr. BARROWS presented a case of

“DERMOID CYST DELIVERED THROUGH RECTUM AND ANUS BY  
ADVANCING HEAD.”

Mrs. G., thirty-eight years old and the mother of four children, was seen by me on November 21, in consultation with Dr. Morris Klein. Dr. Klein reported to me that he had seen the patient first the day previous when she had advanced well into her fifth labor. The os was completely dilated, but the progress of the head was interrupted by a soft, boggy mass behind and below the cervix. He, with the assistance of a young medical friend, applied forceps and delivered a living child without much difficulty.

As the child's head was drawn through the vaginal outlet there was delivered through the rectum a mass somewhat larger than the fetal head.

Believing that they were dealing with a prolapsed rectum, Dr. Klein and his medical friend attempted to reduce the mass. In their efforts at reduction the mass was punctured and material which they believed to be feces escaped. They closed this opening with a catgut ligature, and when morning came, a few hours later, called me in consultation. The tumor proved to be a dermoid cyst, the characteristic caseous material filled with hair, having been mistaken for fecal matter.

The woman was in good condition, with a temperature of 102°, and a pulse rate of 90, and some slight distention and tympany of the abdomen. I transferred her to the Har Moriah Hospital and opened her abdomen at once. The pelvis was filled with blood clots, and the whole peritoneal floor had been carried away by the advancing dermoid cyst of the right ovary. The rectum was torn open for its entire length down to within two inches of the anus. The uterus was about twice the normal size, and was

filled with multiple fibroids. I tied off the pedicle and delivered the tumor from below, having attached a long clamp forceps to the cyst before opening the abdomen in order to facilitate delivery and lessen, if possible, dangers of infection. I then repaired the injuries to the right broad ligament and the rectum as well as could be done from above, and packed the rectal tear from below. The bowels were kept constipated for four days, at which time the packing was removed, and they moved normally without assistance.

The patient has made an uneventful recovery, and has been discharged from the hospital well.

#### DISCUSSION.

DR. JEWETT.—I was cognizant of a case a few years ago in which in a forceps extraction a dermoid cyst was brought down in advance of the head through the vaginal wall. The cyst was ruptured, but no infection followed, most of the contents having escaped externally.

Papers were read as follows:

DR. E. W. PINKHAM.

#### ETHICAL QUESTIONS INVOLVED IN ABORTION.\*

DR. W. P. POOL.

#### THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF ABORTION.†

#### DISCUSSION.

DR. EDGAR.—In the old days, when I went on a two years' service as interne at Bellevue, we were in the height of an ultra-radical treatment of abortion. No abortion was allowed to be treated expectantly at that time. Every abortion was considered to be an incomplete abortion. So every one was promptly curetted along the lines laid down at that time for the treatment of incomplete abortion.

In the spring and summer of 1888 I served six months under Winkel in Munich, and at that time he was in the height of his ultra-conservative treatment of abortion. An abortion, whether it was complete or incomplete, was left entirely alone in the wards to empty itself, and if any of the gentlemen who served as internes at that time were here to-night, they would bear me out that it made a most unfavorable impression upon all those who watched the ultra-conservative treatment of incomplete abortion. A large number became sapremic, and quite a number became frankly septic. The odor in some of them would become something awful, and not even then was interference inaugurated. Somewhat later I collected between two and three hundred cases of early abortion, that is within the first twelve weeks,

\* See original article, page 413.

† See original article, page 421.

all of which occurred in tenement houses, and a large number were undoubtedly criminal cases. Every one of those was promptly curetted. We had excellent results from this radical treatment, not one of those cases did we lose. We cannot recollect any prolonged sepsis, although we received a good many of those cases who were at the time septic.

So the interest in the discussion to me centers around the point how we are going to get the uterus clean if we decide to curette it. I cannot conceive of anyone cleaning out the decidua at the twelfth week or later with the gloved finger. It is simply an imperfect operation, imperfectly done. Very little, if anything, is brought away. No more can I conceive of cleaning the uterus out with the smooth curette, or even a wire curette. It slips over the membranes and we do little or nothing in removing material unless it be a septic uterus and the material is soft.

In the last few years I have come to feel myself the same way as regards the sharp curette. We see instances where we have a dead ovum and that decidua is attached to the uterine wall so firmly that an ordinary curette makes little or no impression on that decidua, and so in the last two years I have been using what will sound radical perhaps to members of this Society—a sharp curette which is serrated. I have them made in Paris. It is not my idea; the French have been using them for some years, and it is a very finely serrated instrument. I do not use it firmly, but use enough force to secure a hold on the membranes. My belief is that with a finely serrated curette you can empty a uterus with less traumatism because you do not use so much pressure or weight. I have even used it in the last three months. One case I had a few days since—a retained placenta. I waited three hours and then she leaked so much that I expressed the placenta, but all the membranes were retained. I let her rest up a little and then gave an anesthetic. I took the serrated curette and with very little force applied to the uterine wall I could readily remove the membranes. It took two or three movements to get them out. The smooth curette would not have touched those membranes. It sounds very radical to use a serrated curette to remove membranes, but you can do just as much harm with a knife if it is improperly used, but with the serrated curette you can secure the membranes with little or no traumatism to the uterus.

I think there are cases which do not need curettage, but from my standpoint it is much safer to curette even if there is apparently a complete abortion, and many of us believe that this never occurs. It is always safer to do a straightforward curettage and make sure you have no retention in the uterine cavity. I am rather inclined to use a curette on septic early abortion. I think it can do a great deal of harm in breaking down the line of demarcation, but in the early months, when the deciduæ are removed with the curette, recovery is almost always prompt.

DR. JEWETT.—The argument of Dr. Peterson cited by Dr. Pool does not appeal to me. The uterus at abortion is not quite comparable to the uterus at term. It is less easily infected. I have always believed that instrumentation in the presence of fresh living tissue in the uterus is less dangerous than even skilled interference in the presence of sepsis.

I make two classes of cases:

1. When the pregnancy has not gone beyond about two and one-half months the uterus is readily emptied in about eight minutes. Only enough dilatation is required to pass a Keith clamp. With the latter most of the ovum is brought away. The work is then finished with a sharp curette. Even though a few minute shreds of decidua may sometimes remain behind, I have seen no trouble from them in the absence of primary sepsis. They are soon swept out in the discharge.

2. At three months or later gradual dilatation is necessary.

DR. COLLYER.—There are practically three forms of abortion. One is spontaneous, relieved without medical assistance, another will get well without operation; the last is where hemorrhage or sepsis is likely to occur on account of retained secundines, and that requires instrumentation. The sharp curette has given me the best results, and in septic abortion, in my opinion, there is only one thing to do, remove the septic material as quickly as possible. Disinfect the uterine cavity, inserting a strip of iodoform gauze for drainage. I desire to bring out the fact, that it is dangerous in some hands to use any instrument in the uterus. A sharp curette has been known to go through the fundus uteri, so has a dull curette, but it is a question who uses it. In dilating the uterus there are many uteri which will rupture on very slight pressure, and a rupture into the broad ligament is attended with a great deal of hemorrhage, and it is something to be cautioned against. As to letting an abortion alone, I have had the dangers illustrated to me on many occasions.

When abortion begins I believe the physician should stretch the cervix and empty the uterus as soon as possible with a curette to prevent probable subsequent dangerous hemorrhage or sepsis.

DR. VINEBERG.—I learned one thing in dispensary practice, *i.e.*, that spontaneous abortion almost invariably will not go to sepsis. It was surprising to see women in the lower ranks of life coming there in the early stages of pregnancy in various grades of abortion; some in which abortion had not really occurred, but only threatened; some cases of partial abortion; some of retained decidua, but almost invariably when there had been no instrumentation and no examination there was no fever and no sepsis.

I agree with the gentlemen that in those cases which are septic, and where there are products of conception in the uterus I should use the sharp curette. My experience has been that the vast majority get well promptly, as soon as the uterus is

thoroughly emptied. In the few cases in which the infection has passed beyond the uterus a fatal result usually follows, no matter what is done.

MR. ALMUTH C. VANDIVER read a paper on the

LEGAL RESPONSIBILITIES AND PROTECTION OF OPERATOR AND  
CONSULTANT IN CASES OF CRIMINAL ABORTION.\*

DISCUSSION.

DR. COE.—Is a physician attending a case of suspected abortion, where death is imminent, obliged by law to summon the coroner to take an antemortem statement?

MR. VANDIVER.—No, sir, not until the death occurs.

DR. COE.—Why do the coroners, especially one of them who is full of pernicious zeal, assume that the law gives them the right to threaten with arrest, or to otherwise persecute, a physician who omits to have such an antemortem statement?

MR. VANDIVER.—There is no statute making it necessary. It applies only in the case of death, and in my opinion the professional privilege prevents him from inviting in the coroner until after the death of the patient, unless he wants to protect himself from the stupidity of the police and coroners. If it is his first visit to a stranger I think that his own judgment would direct him to notify the coroner at once.

DR. STUDDIFORD.—At Bellevue we get a good many cases of abortion, those of incomplete and septic. A great many of them are undoubtedly criminal cases. The rule of the hospital is that the coroners must be notified in all these cases, and we very frequently have them in the wards to take ante-mortem statements. If such a rule is not followed it often leads to a great deal of difficulty between the coroners, the house staff, the attending physician, etc. Supposing you are called to a case outside the hospital where it is very evident the woman is suffering from abortion. The history is vague. You are convinced that something is being concealed, and the probabilities are that criminal abortion has been performed. Is it advisable in such a case to report that case to the coroner for an antemortem statement?

MR. VANDIVER.—I should say yes, doctor, because you expose yourself to some annoyance in the event of the patient dying. In the case of the hospital I fancy the rule is because the hospital is a coordinate branch of the government.

DR. EDGAR.—Supposing a physician were called in a case of septic abortion, and had every reason to believe it was a criminal case, I would like to ask whether he should consider it advisable to report it to the coroner. I understand there is no law which would require it to be reported to the coroner.

MR. VANDIVER.—He should report it for his own protection only on account of the stupidity of the officials, as it frequently

\* See original article, page 429.

has occurred since I have been counsel to the medical society, and before that time, that physicians who subsequently were discharged have been arrested by the police, simply because they were the last physician attending the patient and they had not made their report to the coroner.

DR. KRUG.—I would like to ask a question regarding ectopic gestation. Is a woman, according to the laws of the state of New York, considered pregnant when she is carrying a child outside the womb? Now, if an attempt at abortion had been made and if it were found the woman has an ectopic gestation when the consultant is called in, does the law of the State of New York say anything about that?

MR. VANDIVER.—It says if it is necessary to save the life of the woman or child it is not abortion. There is some doubt between lawyers as to the exact meaning of the law.

DR. KRUG.—What is the status of the man who has previously attempted to produce an abortion in that case of ectopic gestation?

MR. VANDIVER.—In my opinion he is guilty whether she is pregnant or not.

DR. JEWETT.—The law permits the interruption of pregnancy because it is necessary to save the woman's life. Yet it is common practice to induce abortion when indicated only for the amelioration of the patient's condition. We feel justified in doing it merely to forestall the serious impairment of some important function, as for example the eyesight. I wish to ask Mr. Vandiver if he would think it advisable to attempt to secure legislation with a view of legalizing the latter practice.

MR. VANDIVER.—I should think it would be inadvisable for the reason that the professional abortionist would take advantage of it. The burden of proof that the necessity exists is upon the accused, and laws are drafted to cover the whole people, and where there are exceptional cases the prosecuting officials are intelligent enough generally not to bring indictment against a reputable practitioner. He can show that what he has done is in the best interests of the patient. I should think legislation would be inadvisable. In my judgment the statute should be made clearer, more decisive, especially in the matter of the use of instruments.

DR. COE.—If this law is interpreted strictly would we not all be "doing time"? (Laughter.)

MR. VANDIVER.—If all laws were strictly interpreted you would all without a doubt be in prison.

DR. BRETTAUER.—That the statute ought to be changed proves a case I had some time ago. A young woman was admitted to my service at the hospital. A criminal abortion had been performed upon her. The woman was curetted, and six days afterward she developed tetanus and died promptly. We reported that case to the coroners' and the district attorney's offices. The district attorney sent a representative and the coroner came himself. Each one separately had an antemortem

statement from the patient, and finally the doctor was confronted and pointed out by the patient as the performer of the abortion, a well-known abortionist of this town. This man was discharged; he could not be held because the only possible way of convicting him would have been the finding of the tetanus bacilli on the instruments which were used to induce abortion. At least that was the coroner's explanation.

MR. VANDIVER.—A bill introduced in the legislature a year or so ago, abolishing the coroners, should have passed. It is legislation that most officials who have to do with the criminal courts would approve. If the coroners were abolished and the duties vested in physicians, and these physicians attached to the board of health, we would have a system which would work out to the advantage of the profession and the people. The judicial duties now discharged by coroners could be, and generally are, discharged by magistrates, and the medical duties ought to be discharged by physicians under the supervision of the board of health. Then you would not have the arrests of physicians except under the order of the court. No reputable practitioner would be arrested in the early hours of the morning and kept in jail until he could get bail some time the next day.

DR. BROWN.—As I understand the matter our duty to ourselves is that when we are called to a case of abortion, and we have reason to think it induced, in order to prevent any unpleasant occurrences we should notify the coroner of being called to such a case. Unless the patient wishes to make an antemortem statement, the coroner's office is not interested in the matter. The notification of the physician before undertaking any operation that might be needed is a safeguard against annoyances in the event of the patient's death.

MR. VANDIVER.—Yes, that is right.

DR. BRICKNER.—At Mt. Sinai Hospital it is the rule to report all cases of abortion to the board of health, which takes such action as it sees fit. For instance, last July a patient was admitted to our service on Sunday night at 2 o'clock with the following history: On Saturday morning, when about six weeks pregnant, she had gone to a physician in Brooklyn, whom she named, and he had introduced an instrument into the uterus and gave her instruments to introduce Saturday night at home, which she did as best she could. On Sunday morning she was seized with a chill. Her temperature rose to 106°. Sunday night she was admitted to Mt. Sinai Hospital. She was curetted very early Monday morning and most putrid contents taken away. Monday evening she died. The case was reported to the board of health and the matter was presented to the coroner. Nothing was ever done to the physician. He was identified, was known by name and address, was found, and was recognized by the patient.

I know that other cases have been reported, but so far as I

know no action has ever been taken against the physicians even when they have been identified.

DR. VINEBERG.—These antemortem statements, are they taken by the coroner? Is anyone else present at the time he takes these statements?

MR. VANDIVER.—Sometimes. The practice varies.

DR. VINEBERG.—Because I understand one of the coroners made a rule that he be allowed alone with the dying woman, and in two or three instances I know the coroner made it very hot for the doctor who had been in attendance. The woman had, so the coroner said, given him a statement incriminating the doctor, which the doctor said was false, as he had not done the things he was accused of in the alleged antemortem statement. It seems to me that undue privilege was given to the coroner.

MR. VANDIVER.—The practice varies with each coroner. They may take the statement alone by themselves, but there is no legal warrant for it.

DR. BROWN.—At the Woman's Hospital we have found by experience that in a case of criminal abortion admitted to the hospital, before any operation is done the coroner's office should be notified that such a case is in the hospital, and that she needs an operation. His answer is: Does she wish to make an antemortem statement? The patient having expressed no desire to make such, the office of the coroner has no interest in the matter. In two instances where they were not notified and the patients died, the hospital was given much annoyance. So we find it is wiser and very much easier to notify them at once of the presence of the patient instead of waiting until the patient is expected to die or until after her death.

DR. COLLYER.—This is approved only so far as hospitals are concerned. It is natural they should notify the coroner, but it is different in private practice where we are brought face to face with a case of abortion that may or may not have been induced. We are likely to get into very serious trouble if we on every occasion notify the coroner; the law does not require it, so the attorney states, unless the case dies by criminal acts. A couple of my friends, one of whom is here to-night, were arrested and taken to the station-house and would have remained there all night had it not been for the aid of the assistant district attorney who was called upon and obtained their release. That woman, I believe, had not died. These doctors were in performance of their duties to save life, and the police had no authority to arrest them, if I understand correctly.

DR. COE.—I must confess that I have always had a great respect for the law, but I have less after hearing the statutes read by our esteemed legal brother. They are very vague. That word "quickening" is a most mischievous expression. I think that we must admit that the morality of most women is, in the matter of abortion, not of a high standard, and practically

every woman has the idea there is not any harm in emptying the uterus before quickening. Unfortunately, we find among some gentlemen of our profession the same erroneous idea. It is surprising to see the cases brought to us in which we are urged to terminate a pregnancy for trivial reasons. This law is imperfect; we ought to revise the whole thing. It is an absurd system, that of these coroners, absurd to anyone who has lived in Massachusetts under the system of medical examiners. Coroners certainly seem to be mediæval.

MR. VANDIVER.—It is the survival of a mediæval system.

DR. COE.—My own recent experience is briefly this: I was called one evening to a strange patient, in a hurry, and at great personal inconvenience. I found a young girl bleeding profusely and in great pain. Her mother was with her. She said she had skipped a period and she absolutely denied any interference, attributing the symptoms to a fall. I sent her at once to the Woman's Hospital, put in a tampon, and next morning curetted the uterus, in the presence of two of my colleagues, removing some decidual membrane. The temperature ( $101^{\circ}$  on entrance) dropped to normal, and after two or three days the case gave me no anxiety. She was a reputable, unmarried girl; her mother knew nothing about her condition, nor did her brother, and I could not see that there was any reason why I should bring disgrace to the family. On the fourth day she had a violent chill, her temperature rose to  $105^{\circ}$ , and, in spite of all we could do, she died of general septicemia on the sixth day.

I saw no reason why I should bring that family into the case by sending for the coroner to take an antemortem statement which was not requested by the patient or family. The same afternoon (Sunday) he came up with blood in his eye; his physician made an autopsy, absolutely swore that it was a case of criminal abortion which was something I couldn't have sworn to myself. He acknowledged afterward that there was no lesion or anything in the tissues to indicate the origin of the septic endometritis.

When I reached home three reporters were waiting for me. The next day, during office hours, three detectives lay in wait for me, one from the central office, one from the homicidal bureau, and the third from somewhere else.

Then I began to get mad and went down to see Mr. Jerome. I asked him to tell me if I was liable for not having sent for the coroner to take the woman's antemortem statement. He said no, but I was nevertheless exposed to all the annoyances incident upon a rather disagreeable inquest.

In such a case it would seem as if a reputable physician was justified in proceeding against the coroner legally for defamation of character. Each one of those detectives who came to my office looked upon me and treated me as if I was the guilty party. I did not know the abortionist at the time, nor do I now. I said, in concluding my testimony, "What I did I will do every time

when a similar case comes under my care," and the coroner said, "That will do."

DR. BRETTAUER.—I certainly do not think it is our duty to report these cases. We take care of them as patients; must we also play detective?

MR. VANDIVER.—No, sir. That is entirely in the hands of the board of health, department of health, which is composed of the health commissioner and the police commissioner. They have the authority under the law to draft the sanitary code.

It is a matter you medical gentlemen know better than I. I agree with Dr. Coe that the law should be amended and made clearer, and that it should be done by medical men. The present law has been put through by amateur legislators and amateur lawyers—some were neither (laughter).

On motion a rising vote of thanks was tendered Mr. Vandiver for his comprehensive paper and discussion covering the legal questions involved in the production and treatment of cases of abortion.

## TRANSACTIONS OF THE SOCIETY OF THE ALUMNI OF THE SLOANE MATERNITY HOSPITAL.

*Meeting of January 29, 1910.*

*The President, O. P. HUMPHSTONE, M. D., in the Chair.*

DR. JAS. D. VOORHEES reported a case of

### PYELITIS OCCURRING LATE DURING THE PUERPERIUM.

The patient, Mrs. B., was thirty-nine years of age. The previous history was negative except for more or less intestinal indigestion and constipation.

She had had four children without any trouble or complications. The last one was born July 17, 1909. The patient did well, except for gas, intestinal discomfort, and constipation with large amounts of mucus in the stools. She nursed, but the baby did not gain steadily. Her physician thought her quite well and about September 1 went to Canada for his vacation.

On September 12 she took a fairly long motor ride and in the evening complained of backache. The next morning, the forty-eighth day after delivery, she felt chilly, and at noon her temperature ran up to 101° and at 8 P. M. was 102°, the pulse rising

to 128. She complained of sharp pain in the right iliac fossa with backache and was severely prostrated by her fever. A local physician (the case being out of town) was called in. He made a diagnosis of puerperal sepsis and advised an immediate curettage. This alarmed the relatives and I was sent for. I arrived at 11 P. M. At this time the patient was better. Her temperature had fallen to 99.8° and the pulse to 110. She was perspiring profusely. The abdomen was considerably distended, with no rigidity, but marked tenderness in the right iliac fossa was elicited. This tenderness ran up to the right kidney on deep palpation. This kidney was quite tender and slightly enlarged. The left kidney was somewhat sensitive. The urine was cloudy, with odor, and a marked sediment.

I ordered calomel followed by a saline the next morning; urotropin grs. viiss every three hours; large draughts of water by mouth; and an ice bag locally.

I spent the night in the house and on the next morning, September 14, the temperature was normal, the pulse 96. There was less pain over the kidney. A diagnosis of pyelitis was made before the urine could be examined and I returned to New York. The urinalyses made in town showed an acid reaction, sp. gr. 1022, 15 per cent. albumin by volume with 10 per cent. pus, a decided bacteriuria and a few studded epithelial casts. The patient's physician had been telegraphed for and he arrived to take charge of the case during the evening, when she was better, the temperature being only 99.6° F.

September 15. The patient continued to improve, the temperature was only 99.8° in the evening.

September 16, I saw her again. She was much better in general and she was passing large quantities of urine containing only a trace of albumin, but considerable pus. There was less pain and distention, but her temperature had risen to 100.4° F. It looked as if she was going to have a short infection. However, at noon the next day after a saline colonic irrigation she complained of intense abdominal pain and felt chilly later in the evening. At 8 P. M. the temperature was 101° F., rising further to 103° F. at 10 P. M. Her own physician could not be reached so I was again sent for. The whole abdomen was tender but especially in the right iliac fossa. The patient spent a wretched night and at 4 A. M. the temperature was 104° F. As the husband could not understand why this severe relapse came on under appropriate treatment, and realizing the possibility of a concurrent appendicitis, it was decided to have a general consultation, especially as the temperature had risen higher, to 105°, so another obstetrician and a surgeon were summoned. I think only the presence of the obstetricians, possibly together with the blood count, which was not conclusive, prevented an immediate appendectomy. Delay and close observation in town were determined upon. Accordingly the patient was brought to Bull's Sanitarium. The temperature did not begin to fall until the next

morning when it was  $102^{\circ}$ , but in the evening it rose to  $103^{\circ}$  F. A complete urine examination by Sondern showed a pyelitis due to the colon bacillus. The symptoms referable to the appendix were less marked, and on the whole the patient was much better. This improvement continued, and in three days the temperature was practically normal. The pus was found continuously in the urine for a long time. I saw her again October 20, a month later, with a slight attack of pain and tenderness over the left kidney with a temperature of  $100.2^{\circ}$  F., and with still a slight pyuria. This vanished on the next day and since that time I believe the patient has been in fair health.

I cite this case of pyelitis: 1. on account of the very late appearance during the puerperium, and 2. on account of the different diagnoses made. I believe the patient must have had a bacteriuria and a pyuria fairly soon after her delivery. If this had been discovered early, under appropriate treatment, and, I must say, under a successful management of her intestinal indigestion, the acute illness could probably have been prevented.

Besides sepsis and appendicitis, I have seen cases of pyelitis mistaken for "cold," grippe, malaria, typhoid, and in one case a kidney was incised for an abscess. Diagnoses of stone in the kidney and in the gall-bladder have also been made. When the general practitioner realizes the frequency of pyelitis and the possibility of this complication during pregnancy and the puerperium, he will make fewer such mistakes in diagnosis.

#### DISCUSSION.

DR. E. B. CRAGIN said that he was impressed by three things in this report. The first, that there was no time in either pregnancy or during the puerperium in which there was no danger from pyelitis. It may come on, as reported, as early as the sixth week of pregnancy or it may develop at the very end of the puerperium. The second point was its resemblance to appendicitis. He referred to a case which was seen in consultation and in which he agreed with the attending physician in the diagnosis of appendicitis. Somewhat later on his way home he realized, however, that he had to do more probably with a case of pyelitis than appendicitis. He communicated this opinion to the physician who had attended the case and a subsequent examination of the urine showed the truth of his suspicions. One of the reasons why these cases resembled appendicitis was the fact that the ureter was tender and pressure on McBurney's point pushed the uterus back upon the tender ureter. The third point was the value of conservatism.

Dr. Cragin's first paper on this subject before the American Gynecological Society closed with the sentence "induction of labor is seldom if ever indicated." Since then he had had two cases in which it seemed right to empty the uterus and those were the only ones in which he had ever felt the necessity of interfering. He

believed that induction of labor was very rarely indicated. Now, after labor or during the puerperal period, however, he admitted that the danger of involvement of the kidney substance was a little more marked than before, and in two of his cases it was necessary to remove the kidney. These cases constituted rare exceptions and the more instances of pyelitis met with, the more we must realize that they usually recover under palliative treatment. Another interesting feature about this condition was the fact that, although exceptions occur, the patients were unlikely to have any recurrence. The worst case he had ever seen was a woman who had been sick a very long time, but went to term, and since then had had two children without any signs of pyelitis, with the exception of one day when a little pus was found in the urine and in addition there was a slight rise of temperature. In closing, Dr. Cragin emphasized the relief which comes to the obstetrician when from a rise of temperature he suspects puerperal infection and finds on examination of the urine the presence of pus and the colon bacillus, together with an acid reaction.

DR. E. A. GALLANT believed that a woman who has been recently delivered was particularly susceptible to displacements of the kidney. The dragging to which the ureter is subjected usually results in a kinking of that tube, producing an obstruction, which results in the retention of urine in the pelvis of the kidney. This retention favored the growth of any bacteria which might be present and resulted in the production of a pyelitis. When the patient assumed the recumbent posture the kidney slipped back, the retention was relieved, and the temperature fell, only to rise again when the patient sat or stood up. He thought that without some form of obstruction to the urinary stream, even pyogenic bacteria would not give rise to temperature.

DR. SAMPSON believed that it was usually unsafe to generalize from an individual case, yet he wished to report the following as having a bearing on the treatment of the condition under discussion. A patient was referred to him about a year ago, a diagnosis having been made of either extrauterine pregnancy or pregnancy complicated by appendicitis. On examination the patient was found to be between four and five months pregnant and the urine contained pus. A diagnosis of pyelitis complicating pregnancy was made which was later confirmed by making urinary cultures from the pelvis of the right kidney by ureteral catheterization. The patient was treated conservatively and made to assume the knee-chest posture several times a day and at other times was directed to lie on the left side with pillows under her hips. This treatment relieved the patient of the pain. After remaining in the hospital for two weeks she returned home and was able to go to term. The idea of the knee-chest posture and the elevation of the hips was not to permit a displaced kidney to assume its proper position, as the organ was apparently not displaced in this instance, but that the gravid uterus, which probably pressed on the right ureter, would be

made to fall forward and away from it, in order that the urinary flow would remain unobstructed from the kidney to the bladder.

DR. VOORHEES referred to the fact that Dr. Cragin must be given the credit for bringing the subject of pyelitis during pregnancy and the puerperium before the medical profession of this country. Dr. Voorhees agreed entirely with Dr. Cragin's remarks and especially with the statement that induction of labor was rarely, if ever, indicated. It seemed remarkable how sick these patients could be, how much pus and albumin might be in the urine and yet they would yield to appropriate treatment and go to term. It seemed to him that those rare cases which develop a pyelonephritis with multiple abscesses in the kidney were not due to the colon bacillus but to an ascending pyogenic infection from the bladder. Dr. Voorhees had not induced labor for pyelitis and had seen only one case where the kidney was subsequently so involved as to necessitate a nephrectomy. He carried this patient through a pregnancy, through a miscarriage, and then later, during an early pregnancy which was not appreciated, the kidney was removed because the patient developed violent chills and fever. The organ was found to be the seat of multiple abscesses. The speaker could not agree with Dr. Gallant's statement that movable kidneys were more liable to develop a pyelitis; but, as Dr. Cragin had said, pregnancy pushed these kidneys into place and was therefore beneficial. Postural treatment, however, is undoubtedly helpful in the management of pyelitis and should be a routine treatment. Patients should be taught not only to lie on the abdomen and on the opposite side to the kidney affected, but also to assume the knee-chest position in order to relieve the pressure obstruction of the growing uterus on the ureter. He always expected and prepared for the recurrence of a pyelitis during subsequent pregnancies. He had one case which probably presented a pyelitis during four pregnancies, but had no urinary symptoms in between. During the first pregnancy, because of fever and of pain over the kidney, the organ was incised, but nothing found. The wound was sewed up and the patient promptly miscarried. During the second pregnancy, after three or four weeks of fever, a premature labor took place at about six months. In two later pregnancies the patient developed pyelitis about the fourth month, but in each case she could be carried through to term under appropriate treatment.

DR. J. DOUGLAS presented a specimen from a case of

#### CONGENITAL OBSTRUCTION IN A NEW-BORN INFANT.

The specimen was from a baby thirty-six hours old, brought into the St. Luke's Hospital with a history of absolute constipation and continuous vomiting since birth. The doctor who had delivered the child said that he had removed a grayish mass the size of a hazel nut and resembling a phosphatic calculus, from the rectum.

Examination showed marked distention of the abdomen, particularly in the epigastric region. There was no abdominal rigidity or elevation of temperature, but the pulse was very rapid. Rectal examination was negative. A diagnosis of intestinal obstruction was made and as the cause could not be determined an operation was advised.

After gastric lavage an incision was made in the median line, extending about one-half inch above and below the umbilicus. Exploration showed that the small intestine, greatly distended, 63 cm. from the pylorus, ended in a blind pouch in the region of the umbilicus. From the end of this a mass of soft connective tissue in which were many fibrous bands ran up to the umbilicus. Within this mass of connective tissue two distinct segments of undeveloped intestine closed at both ends could be made out, one empty and one filled with soft material. From the same mass ran the continuation of the small intestine, undeveloped and undistended, being only 7 mm. in diameter. The large intestine (colon) was 9 mm., the sigmoid 5 mm. in diameter, while the distended small intestine above the pouch was 2.5 cm. in diameter.

The obstruction was evidently due to lack of development caused by pressure of the remains of the omphalomesenteric duct or vessels, and the only possible treatment was enterostomy or an attempt at enteroenterostomy, neither with much promise of success. While determining which course was the best to pursue, the child vomited a large amount of grayish fluid (notwithstanding its previous lavage), and inspired a quantity of the vomitus. Its condition became so bad that the abdomen was closed without further treatment and the child died about four hours later.

There have been a number of cases of congenital obstruction reported, but of a series of thirty-two operations which have been performed (twenty-six enterostomies, four enteroenterostomies and two perineal enterostomies) the mortality has been 100 per cent.

The difficulty of performing an enteroenterostomy and the small chance of keeping up the child's nourishment with an enterostomy, especially if the obstruction were in the small intestine, would seem to indicate that the only chance of making the mortality less than 100 per cent. would be to bring both ends of the intestine at the point of obstruction into the wound. A temporary enterostomy should be done rapidly. Then if the child's condition improved in a day or so, an attempt might be made to dilate the undeveloped or undistended intestine below by injecting saline solution in the hope of subsequently performing an enteroenterostomy if the dilatation were successful. Dr. Douglas had found no record of any such operation, but, as all other methods have failed, would attempt it were he to meet with another similar case.

DR. G. W. KOSMAK stated that his personal experience in cases

of this kind was limited to one which he had met with in his service of the Lying-in Hospital last summer. The baby in question was admitted two days after birth with the history of not having had any stool. An examination with a soft rubber catheter disclosed an apparent obstruction in the rectum about two inches from the anus. The baby had nursed some, had not vomited at all, and the abdomen was very much distended. Thinking that the cause of the obstruction was perhaps a septum in the rectum, an attempt was made to reach it from below with the finger, but this was unsuccessful. A left inguinal colostomy was then attempted, and after incising the abdomen the large intestine was brought into view. It was found to be nothing but a thin ribbon-like structure. The artificial anus was completed and as the baby did not seem to mind the operative procedures, a similar incision was made on the right side, and the ascending colon was found to be in the same condition as the descending colon on the other side. From the ileocecal junction upward, the small intestine was about as large as the little finger and filled up with a hard mass. Nothing else seemed feasible, so the small intestine was opened about two inches from its junction with the colon and sutured into the abdominal wound. The mesentery of the small intestine was very long. The child lived about forty-eight hours after the operation, vomited a few times and did not nurse. After death an examination through the colostomy wound also showed the presence of a volvulus in the section of small intestines just above the point where the opening had been made. Dr. Kosmak believed that there was absolutely no hope for these children, but was inclined the next time he had to do an operation, to make an exploratory incision in the median line first.

DR. DORMAN said that for a number of years he had been pessimistic about this class of cases, because at the Post-graduate Hospital he had seen two autopsies that showed a similar condition excepting that there were portions of the large intestine lacking, with intervals of fibrous tissue showing where the gut should have been. The portions of the intestine between the strictures contained a whitish secretion.

DR. VOORHEES believed that these cases of congenital intestinal obstruction above the lower bowel were very rare and he had had but one case in private practice. This baby although apparently healthy and normal began to cry soon after birth, vomited mucus, and seemed to suffer with intense abdominal pain. There was considerable distention present. Within three or four hours the infant showed signs of collapse and died within twenty-four hours. Dr. Voorhees did a partial autopsy and found that the entire small intestine was of a bluish-black color. The various coils were twisted on the mesentery in such a manner as to form a volvulus.

DR. J. DOUGLAS in closing the discussion said that the case reported by Dr. Kosmak illustrated the form of congenital ob-

struction due to nondevelopment or retarded development of the intestine. Beside this and the obstruction caused by the presence of remains of the ductus omphalomesentericus as illustrated in his (Dr. Douglas') case, congenital obstruction might be caused by fetal peritonitis, intussusception, ulceration with scar formation, compression by congenital tumors, anomalies of circulation with resulting ischemia or obliterating endarteritis.

DR. WILBUR WARD, resident obstetrician at the Sloane Maternity Hospital, read a paper on

#### THE USE OF CHLOROFORM IN THE TREATMENT OF ECLAMPSIA.\*

#### DISCUSSION.

DR. E. B. CRAGIN thought that the subject brought by Dr. Ward to the attention of the Society was a step in the right direction. He did not think it was fair to claim to have found a cure-all for eclampsia, but we knew eclampsia produced certain lesions in the liver similar to those which have been experimentally produced in animals with chloroform by Drs. Howland and Richardson. It therefore seemed illogical to use chloroform in the treatment of this condition. Another thing which interested him in the presentation of the paper was the hope that it would stimulate some Sloane man to make the same experiments with ether which Dr. Howland had made with chloroform in order to determine whether from the lesions produced by ether we were justified in our belief that chloroform should be avoided in eclampsia. He could say with certainty that thus far patients, although many of them seriously ill, had done just as well under ether as they formerly did under chloroform. He thought that the reasons for avoiding the latter were amply sufficient.

DR. VOORHEES said that he had not had much experience personally in the use of ether in eclampsia and other cases of toxemia of pregnancy, but was very much interested in the cases which had been treated in this manner at the Sloane. It seemed to him that possibly the perfect results reported by Dr. Ward may have been due to the fact that his cases were not as severe as some of those treated by chloroform in the days when the Sloane received a large number of ambulance cases. Some of those cases were so toxic that they would not have reacted to any treatment whatsoever. In this connection he referred to a series of nine or ten cases which were admitted while he was a resident at the Hospital and of which number only one was saved. These women were profoundly toxic, some with a very rapid pulse and high temperature, and they only lived a few hours after admission. The results of treatment were so discouraging that they despaired of all cases of this kind which were brought in for treatment. However, it seemed to him that the

\* For original article, see page 437.

experimental work which showed that chloroform is dangerous in such toxic cases is conclusive enough to warrant caution in the use of the drug. At any rate, a positive opinion as to the proper drug to be employed will depend on the knowledge to be gained when a greater number of severe cases have been treated by means of ether.

DR. G. L. BRODHEAD said he did not recall having treated any cases of eclampsia without chloroform during the convulsions. For the past two years he had also used Squibb's fluidextract of veratrum viride in every case with convulsions and the results had been very satisfactory, far exceeding his expectations. With the convulsions under control very little chloroform need be administered, except for operative procedures. The doses of veratrum must be large, beginning with 5 to 10 minims by hypo, and following this by five minim doses every twenty to thirty minutes until the pulse comes down to sixty or seventy. Convulsions will rarely occur if the pulse can be kept in the neighborhood of sixty. Dr. Brodhead stated that he had had no experience with the use of ether in eclampsia.

DR. DORMAN thought that the results from the veratrum viride had been very satisfactory. When he was a resident at the Sloane he felt that the nurses sometimes gave too much chloroform in attempting to avoid the convulsive seizures. When giving them their instructions while watching cases of eclampsia, the nurses were impressed with the fact that the recurrence of the seizures would be blamed upon them, and this sometimes resulted in a prolonged administration of chloroform. At that time many cases developed edema of the lungs and failing heart and went from bad to worse. During the summer while he was in charge at the Sloane, Dr. Dorman had seen a very desperate case treated without chloroform. The woman had had a great many convulsions. One day while making rounds he found a beginning edema of the lungs and the patient seemed *in extremis*. The next day, however, she was better and finally recovered. Both in his hospital services and in one or two of his private cases he had disregarded the convulsions and used ether at the time of delivery with very good results. Dr. Dorman thought that the time would come when we would absolutely give up the use of chloroform and use ether for delivery. The control of the seizures is practically uninfluenced by the anesthetic. The use of chloroform had been taught at the Sloane and it was formerly part of the routine to detail a member of the staff to sit with chloroform handy beside the patient to prevent the occurrence of seizures and you could often tell these patients by the number of chloroform burns on their faces.

DR. R. W. LOBENSTINE stated that he approved of all the statements made by DR. Ward on the use of ether in eclampsia and in the toxemias of pregnancy. Ether had been largely used during the last three years in his service at the New York Lying-in Hospital. In the types of cases under discussion, it seemed to

be safer than chloroform both in regard to its immediate as well as its remote effects. It was, of course, difficult to form a true estimate of what effect the use of ether in such cases was going to have upon the mortality rate. He felt that the prolonged free use of chloroform might be partly responsible for those peculiar cases of eclampsia which present "the clinical manifestations of hemorrhages."

DR. KOSMAK referred to a point which was brought out in Dr. Ward's paper; namely, that hemorrhagic lesions which were found postmortem in the liver were due to the effects of the chloroform administration. Although he did not favor the indiscriminate use of chloroform, Dr. Kosmak thought that in view of what we know about these lesions, it is not quite fair to ascribe them entirely to the use of this anesthetic. Undoubtedly there is a great deal of danger to the kidneys and the liver, but it has been shown by autopsies that the same lesions were present in cases where the patient had had no convulsions at all and where no chloroform had been given. Dr. Welch, the pathologist at the Lying-in Hospital, had made a very interesting series of autopsies in which these hemorrhagic lesions in the liver, kidney, brain, and other organs were clearly demonstrated, in both kinds of cases.

DR. W. WARD referred to the fact that in a series of thirty-seven cases of eclampsia reported from the Sloane a few years ago, frequent notes were found to the effect that, inasmuch as the patient was having repeated convulsions, a member of the staff or a nurse sat beside the bed for hours at a time administering chloroform, one note reading that the patient was kept under chloroform all night, a doctor sitting by the bedside. Here again it is seen that the sickest cases received the largest amount of the drug. It was also noted that several cases, after a long accouchement forcé under chloroform, seemed to get better rapidly after delivery. The improvement during the first and second days was marked, the convulsions ceased, and the outlook for recovery was bright. But a sudden change for the worse took place on the third or fourth day: all the symptoms increased, convulsions set in again, jaundice developed, and these patients invariably died. It cannot be said positively that it was not the disease itself, but the chloroform which caused the reappearance of the symptoms; but, having at the present time a better knowledge of the signs of delayed chloroform poisoning, it seems perfectly rational to ascribe this train of delayed symptoms to the effect of the chloroform and not entirely to the toxemia.

A further point that they considered of great importance at the Sloane was the avoidance of chloroform in bad cases of toxemia in the earlier months of pregnancy. During the period covered by the paper they had from ten to fifteen cases of severe toxemia, with symptoms so marked that an immediate delivery was deemed necessary to save the life of the mother. Ether was used exclusively in the handling of these cases, and while here again the point could not be definitely proved, they felt

quite convinced that by avoiding chloroform the reappearance of eclamptic symptoms was prevented.

DR. JOHN A. SAMPSON, of Albany, then read, by invitation, a paper on

INTRAMURAL ABSCESES OF THE PUERPERAL UTERUS.\*

The discussion on Dr. Sampson's paper was opened by Dr. S. M. Brickner.

DR. BRICKNER thought that the conclusions which Dr. Sampson reached were at such variance with the statements embraced in the description of the cases that they offer some opportunity for discussion.

The so-called clinical phases of puerperal infection which are so often met with in large hospital services vary greatly, and the conscientious and proper treatment of the symptoms which they cause presents very serious questions. He thought that the consensus of opinion regarding this matter was now pretty well established, namely, that acute puerperal infections must be let alone, as shown by Dr. Sampson's third case, in which the second operation, performed about a week after the first, permitted him to make an accurate diagnosis and institute the proper treatment. The fatality which may attend operations in acute infections is notoriously large, and he had seen it so frequently that unless there was a vital indication present, he would not touch these cases. In one instance where Dr. Sampson did a vaginal section where there was a possible rupture of an abscess higher in the abdomen, it is probable that this one was a pyosalpinx after all and might have better been let alone.

Dr. Brickner had reported a fatal case about a year ago at a meeting of the New York Obstetrical Society. The woman had been under observation for some six weeks and her condition had become so desperate that it seemed necessary to operate at once. The vaginal section was followed by a tremendous stream of blood. This was thought to have come from the edge of the operative wound, but as the bleeding did not stop, an immediate laparotomy was performed during which it was found that a large vein had been incised. The latter had passed directly across the lower border of the abscess capsule itself.

As this subject opened up the entire field of operative surgery in puerperal infections, it was impossible to cover the discussion satisfactorily in a five-minute period. He appreciated thoroughly the information which Dr. Sampson had given as regards uterine abscess. He did not know of any diagnostic measure which would enable one to make an accurate diagnosis in this condition.

DR. E. B. CRAGIN, in congratulating Dr. Sampson on the good results which he had obtained, thought that the important thing about the whole matter was the question of operating in puerperal infection. Should we subject the woman who was thus infected

\* For original article, see page 385.

to surgical operation? For his own guidance he had formulated the rule to let the patient alone unless he could get evidence of a localized collection of pus. He was also impressed by the value of conservatism. He had met with five cases of this kind and did a vaginal hysterectomy in all, losing three and saving two—unfortunately losing the important and saving the unimportant ones. Dr. Cragin did not believe that he would have had the courage to have simply opened the abscess and drained without removing the uterus, a point of value which he had learned from Dr. Sampson's paper. Yet apparently this was a wise procedure and the woman was greatly benefited by it. The fact which had impressed him and that on which Dr. Sampson laid particular stress was that the farther advanced these patients were in the puerperium, the lower the mortality from the operation. In his experience at least, the operation was usually fatal if performed during the first week for an abscess of the uterus, but at the end of the obstetrical month the pus had become so localized and perhaps less infective, that better results might be hoped for. If radical surgical methods were resorted to in most cases of puerperal infection, more patients would probably succumb who would otherwise recover, while he doubted very much if those cases of Dr. Sampson's would have recovered if he had not opened and drained them.

DR. SAMPSON thought that the time for operative interference was when we found that the patient was losing ground and this was the point which caused him to interfere in his case.

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## TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

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*Meeting of November 19, 1909.*

*The President, J. T. KELLEY, M. D., in the Chair.*

DR. J. F. MORAN reported

### A CASE OF LATE CHLOROFORM POISONING FOLLOWING FORCEPS DELIVERY.

Mrs. A., age twenty-three, primipara, was never robust but full of nervous energy and subject to fits of depression and irritability. Had a severe attack of scarlet fever, accompanied with kidney, eye, and ear complications, in 1901. Underwent a curettage under ether anesthesia about eighteen months ago. Last menses December 28, 1908. Pregnancy was carefully supervised from the fifth month, the time of engagement for her confinement, and at no time was there the slightest indication of a toxic condition, no headache, disturbance of vision or digestion; kidney and bowel action satisfactory. During the last

three months mush allowed only once daily and buttermilk given. Patient was bright, cheerful, took daily exercise in the open, and looked forward with pleasant anticipation to the approaching birth. Urinalysis every two weeks until the seventh month, then weekly; no albumin or casts. Examination, August 4, 1909. Pelvic measurements, ant. sup. spines, 9 inches; crests, 10 inches; external conjugate, 7 inches; post. sup. spines, 3 1/2 inches; tuber ischii, 3 1/2 inches. There is an average decrease of all the diameters from 1/2 to 1 inch, indicating a just-minor pelvis.

Labor began October 15, 2 A. M. Cephalic presentation. Right occipito-posterior position. The first stage continued until the following morning, 9 o'clock, when the bag of waters was ruptured artificially. The head entered the pelvis in the transverse diameter, rotated anteriorly, and descended to the inferior strait in about an hour. At 1 o'clock, save some moulding of the head, the conditions were practically unchanged. As the pains were beginning to flag it was decided to deliver with forceps. The axis traction variety were applied and the infant was extracted in twenty-five minutes. Cr  d   expulsion of the placenta thirty-five minutes after delivery. There was a laceration of the right lateral sulcus of the vagina, 1 1/2 inch; perineum intact. Chloroform anesthesia, 1 3/4 ounces used. Patient reacted promptly, and was in good spirits. She inquired for the baby and asked that her husband be notified, giving a code signal which had been previously agreed upon. Five P. M.: Temperature 99.2, pulse 110.

October 17, 8 A. M.: Temperature 98.6, pulse 110. Passed a comfortable night and drank a quart of milk since the birth. Eleven A. M.: Complains of feeling sore; slight nausea; no appetite, but is very thirsty. Does not appear as bright as she did earlier in the day. Rather inclined to drowsiness and requested that no visitors be allowed. Later in the day she had slight headache and felt nervous. Five P. M.: Temperature 99.6, pulse 120. When visited at 9 P. M. was still suffering with headache and nausea; has taken quantities of water but no nourishment. She asked for apollinaris water and requested that something be given for the headache and nausea. Sodium bromide and bismuth were ordered, and several doses had the desired effect. Urine catheterized, 53 ounces in twenty-four hours.

October 18, 8 A. M.: Temperature 98, pulse 108. Fairly good night. Headache relieved. Saline purgative given and later, followed by an enema, caused a copious slate-colored stool. When I saw the patient at noon I remarked her sallow skin and slight icterus of the sclera, but as patient's complexion was never very clear no particular importance was attached to the condition. Is still very thirsty but not hungry. Is listless, drowsy, and manifests little interest in anything. No apprehension was felt about her condition, as the tedious labor and

anesthetic were thought to be the cause of the disturbed condition. Five P. M.: Temperature 99.3, pulse 104. On my evening visit patient appeared brighter and asked for something to eat. This was the first time she had expressed a desire for food since the evening of the delivery and it was regarded as a favorable sign. It was now fifty-five hours since the birth; the anxiety for fear the child might have received an intercranial injury was no longer felt, and the mother's apparently improved condition afforded great relief. The urine for the preceding twenty-four hours, drawn by catheter, amounted to 50 ounces, and the nurse remarked its high color. At 9.30 P. M. milk was given; at 12.30 A. M. had some broth, and at 1 o'clock drank water. At this time the nurse noted that the patient was rather drowsy, but thought perhaps she was only sleepy although she recalled that she talked queerly earlier in the evening. At 5.30 A. M. the baby was taken to the mother to be nursed, but it was impossible to arouse her. The nurse summoned me at once, and when I reached the bedside, shortly after 6 A. M., I found the patient in a stupor, pulse 100, of good quality; temperature normal, and breathing regular. There was some blood on the lips and teeth, more than a pyorrhea from which she had suffered for several years could account for, so I thought the patient had probably had a convulsion and I expected she would come out of the coma. After waiting two hours, there being no sign of her regaining consciousness, the jaundice increasing, Dr. Fry was called in consultation. I was confident the toxemia was of recent origin and probably due to chloroform. Examination, 9 A. M.: Patient still in state of coma, pulse, respiration, and temperature same as at previous observation. Abdomen soft, flaccid, fundus uteri reaches quite to the umbilicus, and the liver dullness appeared to be normal. The urine was examined by heat and there was no appreciable precipitate. Dr. Fry concurred in the diagnosis of hepatic toxemia, and that it was due largely, if not solely, to chloroform poisoning. It was hoped that free purgation might relieve the toxic condition. Calomel in quarter-grain doses every fifteen minutes, already begun, was continued and later followed by a saline. The patient was put in a hot pack and colonic irrigation with salt solution given. Five P. M.: Consultation by Drs. Moran and Fry. Patient worse, coma profound, respiration more frequent and labored, temperature gradually rising, pupils react sluggishly to artificial light, face and body swollen, and the jaundice is deepening. The bowels not having moved, elaterium gr. 1/4 every two hours was ordered. Report of urinalysis made by Dr. Machamee was as follows:

Specific gravity, 1023; albumin, trace; sugar, none; bile, trace; urea, 1 per cent. (240 gr. in twenty-four hours). Few granular casts, diacetic acid, in considerable quantities, leucin and tyrosin, leukocytes and mucus cylinders.

Nine P. M.: Consultation. Patient still worse, Cheyne-Stokes respiration, pulse more rapid and weaker, temperature

103; no action from bowels. Eserine, gr. 1/50, and nitroglycerin, gr. 1/100, given hypodermically. Urine drawn, high colored, 50 ounces for twenty-four hours. At 2 A. M. gave simple enema and obtained a small acholic stool. October 20, 1909: Temperature 104, pulse, 170, respiration 45. Entire body intensely jaundiced, especially the face. At 11 o'clock had a slight convulsion, pupils dilated, respiration more hurried, edema of the lungs set in, and death occurred at noon. No autopsy was allowed.

Owing to the insidious development of the symptom-complex, the mental torpor, physical lassitude and nausea were attributed to exhaustion following the prolonged labor and the anesthetic, and the true condition was not recognized until after the onset of the coma; the acholic stool on the second day, although not examined, was thought to be due to the bismuth given the evening before. Notwithstanding the lack of the corroborative evidence of an autopsy, the normal pregnancy, together with the clinical data and urinalysis, points with absolute certainty to an acute toxemia, occurring primarily in the liver, with a pathological picture of cell necrosis of the center and fatty degeneration of the cells of the periphery of the lobule and perhaps similar change in the kidney and other organs, and that the chloroform was the principal factor in its production.

How are these organic changes initiated? They may possibly be explained as the result of an idiosyncrasy, the amount and quality of anesthetic, or insufficiency of the liver; and several of these may exist simultaneously. Chloroform is a protoplasmic poison, and, if administered to a case in which there is deficient dissemination, the intermediate products of tissue metabolism fail of complete oxidation, lead primarily to a disturbance of the function of the liver cells, then to fatty and necrotic degeneration, and, secondarily, to similar changes in other organs.

This case is presented because late chloroform poisoning is a subject of great interest to the physician and surgeon. While a number of deaths have been reported, particularly within the last decade, the majority of the profession is still of the belief that when the patient has recovered from the immediate effects of the chloroform all danger is passed. Chloroform, it is generally believed, kills quickly, while in poisoning from ether the fatal issue may be delayed for several days. Another erroneous impression is that pregnancy affords immunity against chloroform poisoning. Twice as many females die as males, and it is particularly fatal in children. There is no satisfactory treatment, nor have we any way of knowing when it will occur or how we may prevent it.

Since reporting the above case history to the Society I submitted it to Prof. James Ewing, Pathologist, Cornell University Medical College, for his examination and opinion. He kindly replied as follows:

I see no escape from the conclusion that your patient died from chloroform poisoning. Certainly any toxemic element present could not have been severe or it would have shown itself in symptoms. The small amount of chloroform used shows that the patient was unusually susceptible, and this susceptibility which is common in pregnancy and with poorly fed infants shows itself in some cases in a deranged nitrogen partition. The metabolism in these cases may be very unstable or distinctly abnormal without there being any definite symptoms. Yet when the added strain of excessive meat diet or nervous shock, or chloroform comes along, the patient goes to pieces apparently without warning. I do not know what your patient's nitrogen metabolism was like during the last months of gestation, but I should expect it to have been deranged, with high test nitrogen. I should say that a latent toxemia, or rather a disordered metabolism existed and constituted the increased susceptibility to chloroform, but of course I do not know that such was the case. I have recommended the routine determination of the nitrogen partition just for the purpose of detecting these states, but it is difficult to say how often it would be successful. Chloroform is so dangerous in pregnancy that I think it ought to be eliminated entirely from obstetrical practice.

I hope you will publish the case as a warning against the use of chloroform in such subjects, and I thank you for the opportunity of learning about it.

Very sincerely yours,  
J. EWING.

#### DISCUSSION.

DR. FRY had seen the case with Dr. Moran after the development of coma. The condition was interesting as a postpartum toxemia. There had been no urinary signs at any time during the pregnancy or up to death. The chloroform evidently had been the cause of the liver toxemia.

DR. STONE asked if there was any compilation of the number of cases of toxemia occurring during pregnancy.

DR. BOVEE said that it was unfortunate that there had been no autopsy in this case. The tedious labor, instrumental delivery and the temperature elevation shortly after delivery raised other factors as possible causes of death in addition to the chloroform toxemia. He did not believe that the changes in the liver went on so rapidly nor would they show any improvement. The possibility of sepsis from the laceration was not excluded. He had not seen any cases of slow chloroform poisoning in spite of extensive use. Chloroform aggravated the liver more than the kidneys, but he did not think that the jaundice appearing as late as the third day ought to be attributed to the chloroform.

DR. BALLOCH considered the presence of diacetic acid in the urine as significant of chloroform poisoning.

DR. WALL said that diacetic acid was more common after

anesthesia in children; and that leucin and tyrosin in the urine were characteristic of the liver degeneration.

DR. T. C. SMITH said that chloroform has always been considered the most satisfactory anesthetic in obstetrics and safer than ether, that the quantity of chloroform given was not sufficient to produce great harm, and that while there was in this case a toxemia he did not believe that it was due to the chloroform.

DR. MILLER considered the case clearly one of acute yellow atrophy of the liver but doubted the chloroform cause. Pregnancy produced diacetic acid in the urine. He had not long since seen a similar case of acute yellow atrophy of the liver during pregnancy, but before labor.

DR. ABBE noted a case of late chloroform poisoning following a mild appendicitis attack. The patient was a boy of ten who had done well for two days then developed jaundice and died on the fourth day after chloroform. The quantity of chloroform given apparently was not an important factor in the degree of poisoning that followed. In the anesthetics at Columbia Hospital given in the past few years, some of the worse cases of late chloroform poisoning, as shown by the effects on kidneys and persistent late vomiting, had followed the administration of less than two ounces of chloroform, the quantity given in the case of Dr. Moran, and many of them received less than a half ounce. In obstetrics there seemed no better reason for using chloroform than ether as given by the open drop method, and the possibility of overbalancing a latent toxemia, as perhaps was present in Dr. Moran's case, was certainly a strong argument against chloroform and in favor of ether in obstetrics.

DR. WHITE reported a case of late chloroform poisoning and said that the liver infection or destruction seemed to be secondary to intestinal infection.

DR. STAVELY reported a case of late chloroform poisoning accompanied by jaundice that recovered. He understood that the jaundice might be due to decomposition of the blood by the chloroform.

DR. MORAN considered Dr. Bovée to be answered by Drs. Wall and Balloch. This case was typical in its character and an autopsy could only be confirmative. The case had no fever or sign of infection. The patient had been given practically two ounces of chloroform and had been under its influence a little over an hour. He had recently seen the report of a case of a death from chloroform after a half hour of anesthesia. Chloroform did affect the red blood cells. Recovery left no scar in liver, and the kidney lesion was secondary to the liver condition.

DR. FRY read a paper on

#### SOME RESPONSIBILITIES OF THE MODERN OBSTETRICIAN.

He wished to direct attention to some of the changes that have taken place during recent years; changes which compel

the modern obstetrician to renew his youth constantly in order to keep in touch with modern ideas.

First comes development along the lines of asepsis and with it the revolution in obstetric surgery. A closer study of the physiology and the pathology of pregnancy, and of normal and abnormal labor demands attention. The importance was dwelt upon of the supervision of normal pregnancy. Formerly the physician entered upon his duties in absolute ignorance of the physical condition of his patient and he was liable to be called to attend a woman in labor who had an unsuspected pelvic deformity. This emphasized the importance of a careful examination by palpation and pelvimetry several weeks before the time of anticipated confinement. Valuable information is thus obtained in advance, and to be forewarned is to be forearmed. Of utmost importance is the early knowledge of existing disproportion between the diameters of the fetal head and those of the mother's pelvis. Steps necessary to meet the indications must be recognized and whatever is to be done should be elective. This is the secret of success in operative obstetric work. If the case be one suitable for symphysiotomy or Cesarean section do not attempt to deliver by version or forceps, and then resort to surgery. Carefully study the situation and obtain a clear conception of the character of the pelvis and of the existing disproportions between the head and the bony passage: select the method of procedure best adapted to each case and carry out that method in the first place—not resorting to it after the failure of inappropriate substitutes.

Under the head of the pathology of pregnancy he referred only to the responsibilities of the modern obstetrician in the early recognition and treatment of ectopic gestation, placenta previa, and the toxemia of pregnancy. Success in the treatment of these complications depends very much upon early diagnosis. The obstetrician must be familiar with the clinical histories of the complications and he must be ever on the alert to look for them.

A few of the responsibilities of normal labor were mentioned. Occipito-posterior positions were classed among abnormal labors, and Dr. Fry urgently recommended manual rectification instead of attempts to turn the occiput forward with forceps.

He concluded what he called his kaleidoscopic paper by saying: "I would just mention one more duty of the obstetrician. It is to promote the welfare of his patient and to restore her to health. The better the obstetrician does his work, the less work will he give the gynecologist. Lacerations of the perineum should be sewed up; involution of the uterus promoted, and displacements of the organ corrected. The patient should be kept in a reasonable time, and should be encouraged to pass the puerperal month quietly in the house. Too early getting up and resumption of household duties are accountable for much subsequent ill health."

DR. A. F. A. KING said that Dr. Fry had not stood up for vaginal examination which was being put aside by most progressive men to avoid infection, since washing of the hands to the extent of disinfection was too tedious to be practical for all practitioners. Many of the septic cases arose from the examination. The postpartum hemorrhages and malpositions frequently were due to inadvertence of the physician and could be avoided by the postural treatment.

DR. MORAN said that the obstetrician frequently made work for the gynecologist; that the obstetrician was not compensated proportionately for his prophylactic work.

DR. BOVEE said that in ectopic pregnancy early diagnosis was necessary and that early but appropriate treatment was also urgent. The symptoms were the same as those of an intrauterine pregnancy up to the time of disturbance of the pregnancy. Recently he had had two cases which had given no symptom of trouble till rupture occurred.

DR. STAVELY recalled a case where the woman had made her own diagnosis of ruptured tubal pregnancy before sending for the physician.

DR. FRY did not believe that Dr. Williams's position on the importance of the ammonia coefficient in the urine of eclampsia had been upheld by other obstetricians.

#### *Meeting of December 3, 1909.*

*The Vice President, G. T. VAUGHAN, M. D., in the Chair.*

Dr. LOREN JOHNSON read the paper of the evening on

#### BLOOD ANALYSES OF 100 NORMAL CHILDREN.

He gave the following figures:

#### BLOOD ANALYSIS OF 100 NORMAL CHILDREN.

	26 Cases 1 to 6 mos.	35 Cases 6 mos. to 1 year	39 Cases 1 to 6 years
Hemoglobin	80%	75%	80%
Red blood cells	5,520,000	5,100,000	4,220,000
White blood cells	13,600	11,470	9,800
Differential Count	Small Lymphocytes, 48 % Large Mononuclear Transitional..... 7 % Polynuclears ..... 41.2% Eosinophiles ..... 3 ½%	..... 44 % ..... } .. 6 ½% ..... ..... 46.8% ..... ..... 2 ½% .....	..... 33 % ..... ..... 5.3% ..... ..... 59.5% ..... ..... 2.2% .....

## DISCUSSION.

DR. DONALLY opened the discussion, saying that to get the normal blood count of a child it was necessary to know the age of the child in months. Cabot corresponded with Johnson, finding quite definite changes with the age of the child. Cabot quoted Engel on the blood examination of an embryo nine inches in length that was alive and had R. B. C., 3,300,000; W. B. C., 12,000; and hemoglobin 80 per cent. During the period after birth in which the child lost in weight nucleated red cells and megaloblasts were found in the blood; the leukocyte count was 30,000 to 40,000. The most striking part of the leukocytosis of infancy was the lymphocytosis of 55 per cent. during the first year, and the drop of 3 to 4 per cent. each year until the fourth year, after which the lymphocytosis was about the same as in adults. The polymorphonuclear leukocytes were relatively low at first and gain as the lymphocytes lose.

DR. PRENTISS was impressed with the drop in the number of red cells from the second to the third period of 900,000 with an increase of 5 per cent. of hemoglobin and would like an explanation of the paradox.

DR. THOMAS thought that if Dr. Johnson would give some idea of the surroundings of his patients it would probably explain Dr. Prentiss's trouble. If the children could get out of doors more and get more light the discrepancy might disappear. Personally he would like an explanation of what Dr. Johnson had called normal.

DR. WHITE asked if there was any difference in the size of the red-blood cells in the children, and what the normal blood pressures were.

DR. MORGAN did not think the blood examination of as much importance in children as in adults. The polymorphonuclear relation changed rapidly. The eosinophiles were apt to be increased by slight causes.

DR. ADAMS, judging from his own experience in young children, found blood examinations far from satisfactory so far as clinical teaching went. There were many things to be determined as to the normal child; whether it was nursed or bottle-fed. What food elements were taken by the child? As yet, no positive standard of normal children had been established.

DR. ACKER considered it very difficult to come to any conclusion as to the value of blood examinations in children for want of a standard for comparison.

DR. PRENTISS suggested as a substitute for the word normal child that of "child in apparently good health."

DR. JOHNSON thought the change suggested by Dr. Prentiss would be a good one. The cases he had taken were from no special group; some were bottle-fed, and some nursed. The blood pressure examination would probably not be of much value on account of the difficulty of obtaining records, and probably that was why not much had been done in that line. A digestive leukocytosis was present in the children.

## REVIEWS.

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PRAKTISCHE ERGEBNISSE DER GEBURTSHILFE UND GYNAEKOLOGIE. Herausgegeben von K. FRANZ, Jena, und J. VEIT, Halle. Erster Jahrgang, I. Abteilung. J. F. Bergmann, publisher.

The authors have associated with themselves the cream of German gynecologists. In the preface they state that it is their purpose to eliminate all gynecological material that does not have upon it the stamp of science combined with proven practical usefulness.

Extirpation of the Uterus in Puerperal Fever, the first paper, is written by J. Veit, of Halle. Those who know Veit also know that what he says is of much value. He reviews the indications of various authors, but comes to the final conclusion as the result of his experience, similar to that which the reviewer has expressed long ago. In instances of foudroyant sepsis, in bacteremia, in which the blood is loaded with streptococci, the operation is useless. Sometimes the appearance of microorganisms in the blood is temporary, and is no indication for an operation. The absence of organisms in the blood with the presence of virulent organisms in the lochia is held to be a contraindication for the operation.

The article is fascinating reading, but to properly review it requires more space than is permissible.

The second paper, by M. Graefe, of Halle, is on the Artificial Interruption of Pregnancy.

The use of intrauterine injection in the very earliest stages of gestation is serviceable, but not without risk.

The induction of abortion during the first two or three months by means of dilatation and curetting, is warned against. Laminaria tents are preferred for dilatation. After the fifth month of gestation, tents should not be employed; a metreurynter should be used.

The third paper, on Dietetics of the Puerpera and New-born, is by Privatdozent Dr. Schickele, of Strassburg.

Practical experience seems to show that it is better to follow the old treatment of ten days to two weeks' rest in bed, rather than to allow early rising after confinement, particularly for women in private practice. To insure its best development and future health, the child should always be nursed.

K. Franz, of Jena, discusses the Technic and the Indications for Cesarean Section, favoring the extraperitoneal method of Sellheim.

A question of vital importance is whether the so-called extraperitoneal method is one that will make the operation safe in

"unclean" or infected patients. The answer is "no." It is best in such cases to perforate, even the living child; or, in instances of absolute obstruction, to do a Porro operation.

Karl Hegar, in speaking of Endometritis in its Practical Sequence, says:

The most prominent symptoms of chronic endometritis, are discharge, bleeding, and, to a limited extent, pain. A good criterion as to the benignancy or the malignancy of the fluor is its effect on the mucous membrane of the vaginal portion of the cervix and the vagina, whether it causes ectropium and erosion, the formation of Nabothian follicles, soreness of the external genitals.

In recent puerperal endometritis and in postoperative endometritis, intrauterine douches are advised. In acute gonorrheal endometritis, all local treatment should be omitted.

The views as to the treatment of the chronic forms by different authorities are considered. A curette should never be employed except under due precautions; never in a physician's office consulting work.

The different methods of making intrauterine applications, and the medicaments used for this purpose are considered.

Hugo Sellheim discusses Old and New Principles of Forceps Delivery.

The substance is . . . To exactly determine how far the expulsion of the child has been accomplished by the natural process, to complete what is lacking by artificial means. The essential point is that the head must have descended low enough; then it must have the proper size, form, and consistency.

The indication is given the moment that danger exists for the mother or child that cannot be eliminated by milder methods than forceps delivery.

Ernst Runge, assistant at the Imperial Gynecological Clinic of Berlin, writes on Cancer of the Stomach and its Relation to Gynecology and Obstetrics.

In the case of cancer of the stomach or of the pelvic organs, other intraabdominal organs should be carefully examined to determine the existence of metastases. In the event of simultaneous presence of the neoplasm in stomach and pelvic organs, the primary seat is usually the stomach. The method of the occurrence of metastasis has not been definitely determined.

The Diagnosis and Treatment of Acute Diffuse Puerperal Peritonitis is written on by F. Fromme, of Halle.

While our view as to the prognosis is even more unfavorable than that of the author, the article is up to date. The treatment advised is that in each instance of diffuse puerperal peritonitis an abdominal section should be made as soon as the diagnosis has been established. His reason is that without exception a diffuse puerperal peritonitis, unless it be of gonococcal variety, terminates fatally; and the author has some doubt as to whether the gonorrheal variety really does cause a genuine diffuse

peritonitis. He advises in the early stages of the disease, after having made an extensive section, copious washing out of the peritoneal cavity with physiological saline solution. In the event that the peritonitis is of several days' standing, only dry wiping out of the exudative material.

If an examination of the blood shows an abundance of streptococci, the prognosis is doubtful. (In the reviewer's experience it is *always* bad.)

In describing Prolapsus of the Genitals and its Treatment, Hermann Freund, of Strassburg, places an unusual confidence on the broad ligaments as supports of the uterus, more so than on any other single structure. He divides his deductions for the etiological factors of prolapsus into anatomic-physiological reasoning and clinical observation.

In instances of operations on the perineum and anterior vaginal wall only local anesthesia is advised. No one method of surgical procedure is advised; the technic must be adapted to the condition and not to the device of any one operator.

Especial attention should be given to the prophylaxis of prolapsus which must be begun from the beginning of pregnancy.

Obstetrical Hemorrhages and their Treatment, by Dr. August Mayer.

This chapter is ably written and nothing of importance omitted. Although the reviewer has failed to find anything that is really new in the article, attention should be called to some important points, as the assertion of Von den Velden that the intravenous injection of 5 c.c. of a 10 per cent saline solution increases the coagulability of the blood in a few minutes(!); the desirability of giving small doses of morphine during the critical period of a hemorrhage, rather than infusing with normal saline solution, until it is certain that active bleeding has ceased.

In Tübingen clinic the only indication for the manual removal of retained membranes is bleeding or an existing infection.

The Contracted Pelvis is considered by K. Baisch, of Munich. He also briefly treats of deliveries with such abnormality. Perforation of the living child is rarely indicated.

Lumbar Anesthesia, in comparison with other methods of anesthesia based on 1,232 cases, is analyzed by Busse; his conclusions do not vary materially with those expressed by observing operators of this country.

Zangenmeister brings up the question, whether, in instances of ovariectomy, the other ovary, though apparently normal, should also be extirpated. He leaves us none the better informed as the result of his contribution.

J. Veit, of Halle, considers disinfection of the vulva in obstetrics immaterial. Disinfection of the hands during the management of labor is necessary. Veit enumerates what he does without disinfection; and while it is correct that one can do very many things about an operation, in the way of assisting, even some parts of the operation, manipulating only with sterile

instruments, yet for a teacher it would not do to give such instructions where exceptions may be made, because this would soon lead to negligence.

When doing a second operation, it is unnecessary to change gloves if they were not injured during the first operation. Washing the gloved hand for two minutes in an 8 per cent. formaldehyde solution is sufficient to resterilize them. These disinfection rules apply to obstetric practice only.

Gynecological interventions are to be looked upon, so far as concerns disinfection, as is taught by all modern teachers.

BOLDT.

TRANSACTIONS OF THE EDINBURGH OBSTETRICAL SOCIETY, Vol. XXXIV, Session 1908-1909. Edinburgh: Oliver & Boyd, publishers to the Society. 1909.

These transactions afford ample evidence that the work done by this society is of a high order. Some of the contributions in this volume are of unusual merit. Particularly commendable are two papers by D. Berry Hart on "The Physiological Descent of the Ovaries in the Human Fetus" and "The Nature and Cause of the Physiological Descent of the Testis." These papers together comprise about 100 pages of text, and are painstaking and exhaustive studies in embryology. Other contributions worthy of mention are "Renal Decapsulation in Puerperal Eclampsia," by Sir J. H. Croom; "The Anatomy and Histology of the Pregnant Tube," by James Young; "The Physiological Basis for Decapsulation of the Kidney in Eclamptic Anuria," by H. O. Nicholson; "Thyroid Extract as a Preventative of Dystocia from Large Child," by T. M. Callender; and "Mendelian Action on Differentiated Sex," by D. Berry Hart.

## BRIEF OF CURRENT LITERATURE.

### OBSTETRICS.

**Rapid Development of Tumors During Pregnancy.**—Michele Monforte (*Ann. di Ostet. e Gin.*, Oct., 1909) records the histories of five cases, two of which were personally observed, in which tumors of various locations, which had been stationary or slow-growing before pregnancy occurred, began to increase in size with pregnancy, and after labor regressed again. The author brings forward as causative factors in this abnormal development and increase in vascular tension, changes in blood composition, in quantity of the blood, and in size of the heart, which are known to occur in pregnancy. There is increased congestion of the internal organs, one factor in which is the suppression of the menstrual flow. During pregnancy there is an increase of formation of nutritive elements and of toxins in the body. It is conceivable that these toxins may cause an increase of cell formation at some

given point and thus an increase in the size of existing tumors. When labor has occurred, the hemorrhage, the decrease of vascular tension, slowing of the pulse, and elimination of toxins cause a regression of these new-formed cells and decrease in the size of the tumor.

**Amaurosis in Pregnancy.**—Kurt Himmelheber (*Münch. med. Woch.*, October 19, 1909) gives the history of a patient afflicted with chronic nephritis who became pregnant, and during the fifth month of pregnancy had an acute attack of nephritis during which, without warning, her sight failed and in a short time she was entirely blind. An abortion was immediately produced in the hope of saving the eye-sight, but this had no effect on the blindness, which remained permanent and complete. Had this been the result of nephritis, and albuminuric retinitis, it would have come on with less suddenness, and recovery must have occurred. The retinal changes passed away, but the blindness remained. This shows that there was a cause for the blindness behind the retina, in the brain; else optic atrophy would not have been complete as was the case. In ordinary cases the retinitis results from increased pressure and edema of the nerve, just as edema results in the other tissues. Albuminuric neuro-retinitis comes on slowly with gradual dimness of vision, not suddenly. Permanent blindness from uremia is unknown. Interruption of the pregnancy brings about a retrogression of all the symptoms. It is possible that an internal hydrocephalus may have caused pressure on the optic chiasma sufficient to produce optic nerve atrophy.

**Hyperemesis Gravidarum and Adrenalin Therapy.**—Stephan Rebaudi (*Zent. f. Gyn.*, October 30, 1909) refers to the cases of severe vomiting in pregnancy in which relief is not brought about by any form of treatment, and the life of the woman is endangered. The author thinks that vasomotor disturbances of neighboring spinal centers may be the cause of this trouble, and that on this depends the good effects obtained by the use of certain forms of medication. One of these is adrenalin, which has the property of regulating vasomotor conditions and affecting the vomiting center. Freund has applied adrenalin to the nasal mucous membrane in vomiting of pregnancy with very good results. The author has used this method in the Woman's Hospital at Genoa in a case of which he gives the history, and in other cases of nausea, vomiting, and ptialism of pregnancy. Various hypotheses are given to explain the benefit of the drug; the tonic action on the neuro-muscular mechanism and the metabolic effects of adrenalin are cited. In the author's case the adrenalin was administered at first by rectum, later by mouth. In a few days it stopped the vomiting which had been going on for two months, and was so extreme that the patient was weak and emaciated, and her death seemed imminent. The mother received no injury, neither did the fetus of which she was delivered normally at term. Either the metabolism is

improved so that toxins are no longer produced, or the nervous centers and muscular apparatus are toned up by the medication.

**Pathology of Eclampsia and Toxemia of Pregnancy.**—J. E. Welch (*Jour. Amer. Med. Assn.*, 1909, liii, 1358) states that the liver lesions in eclampsia are not uniform. Pregnant or post-partum women dying from convulsions may have hemorrhages, central necrosis, general autolysis, or cloudy swelling in the liver. The liver lesions in toxemia of pregnancy are not uniform. They may be either hemorrhagic or central necroses, both of which are found in eclampsia. The hemorrhagic lesions are produced by liver and placental cell emboli, thrombi formed from blood plates and fused red blood cells, and by a solution of vascular endothelium. Heightened blood pressure increases the extent of the hemorrhages. The agent producing the hemolysis and general cell destruction is probably an enzyme.

**Psychoses Occurring During Pregnancy and the Puerperium.**—In a series of 457 insane women who had born children, E. P. Ballantine (*N. Y. State Jour. Med.*, 1909, lx, 460) found that in 141, or 30 per cent., the onset of the psychosis occurred during either gestation, the puerperium, or lactation. Study of these cases seems to show that the majority of the psychoses associated with child-bearing fall easily into three well-known groups of insanities. (1) The deteriorating insanities, the strain of child-bearing evidently only precipitating a psychosis that was bound to follow any severe physical or mental strain or shock. 2. The recurrent insanities of the maniac-depressive type; child-bearing is merely an incident connected with one or more of the recurrent attacks. 3. The infectious-exhaustive group, in which the insanity is caused by infection or precipitated by exhaustion. In a small percentage of the cases the incident of child-birth brings to the front symptoms of insanities that may have existed for one or more years.

**Syphilis and Pregnancy.**—J. Pénard and A. Girauld (*Gaz. des Hôp.*, Oct. 9, 1909) state that pregnancy exaggerates the severity of syphilis and causes a recrudescence of general symptoms and local lesions. The chancre lasts longer and tends to ulcerate; mucous patches are exuberant, form vegetating hypertrophies, and cicatrize slowly. Syphilis is the most important cause of death of the ovum and infant. The origin of the syphilis and the length of time from infection affect the action of the syphilitic virus. In paternal syphilis, when the mother, not being infected, yet produces an infected fetus, the method of transmission is obscure. The ovum is infected directly by the spermatozoon; this is a syphilis of fecundation. The mother is secondarily infected by the fetus. There is no visible primary lesion, and secondary symptoms appear toward the third month of pregnancy. The mother may present no symptoms of syphilis, the infection being latent only. The mortality in paternal syphilis is less than in maternal syphilis, but abortions are more frequent because the virus has its action at the begin-

ning of conception. Maternal syphilis has different effects according as infection occurs before or at the time of conception; if the mother is infected during the last months of pregnancy, as a rule the fetus is not infected during pregnancy, but may be after birth if nursed by his mother. Such children should not be nursed by their mothers, nor should they be wet-nursed, since it is impossible to tell absolutely whether they will infect the nurse. During the first half of pregnancy infection of the mother is very likely to be fatal to the fetus; from the sixth to the seventh month there is an interval of uncertainty, and later than that the infant may escape. Infection of the infant *in utero* by its mother occurs only after a period of fifty days. Anteconceptional syphilis is most frequent; infection passes by the placenta through the umbilical vein to the liver; it is an infection by the blood and occurs during the period of active exchange between the circulation of the mother and of the fetus; it is later than paternal syphilis, but it is also more serious, for the fetus receives a vitiated nutrition from an infected mother. Mortality is about 60 per cent. When both parents are infected, infection of the fetus by the blood is still more severe and more fatal, the mortality reaching 92 per cent. The influence of time is attenuating to the virus. Early pregnancies end in abortion, later ones in premature labor, still later in living children with syphilitic lesions, and finally healthy children are born. In maternal syphilis, mortality of the fetus is greatest at the beginning, while secondary symptoms are present, and much less after the third year. Time still more attenuates paternal syphilis. In the second generation it is frequent, dystrophies occurring, and sometimes even virulent syphilitic lesions. The destructive influence is almost as great in the second generation as in the first. A reinfection of a hereditary syphilitic is possible even when he has had the hereditary lesions in his youth. In some cases syphilis skips one generation and attacks the next. The effect of syphilis is indefinite, following some families until it causes their extinction. Hydramnios is one of the effects of syphilis, especially in old syphilis, due to circulatory difficulties and portal hypertension, with hepatic and splenic cirrhosis. Death of the fetus occurs generally after it is viable, expulsion does not occur immediately, but generally after more than two weeks, and the fetus is macerated. The diagnosis is facilitated by the Wassermann reaction and finding of the treponema in the tissues of the fetus, or the lesions in life. In the living child the organism may be found in the blood, in a cutaneous or mucous lesion, or in the placenta. In macerated fetuses it is almost always present. Wassermann's reaction occurs in the blood, milk, urine, and cerebrospinal fluid. A negative reaction is not of positive value against the diagnosis of syphilis. It is generally absent in late syphilis. Practised on mother and child at the same time it does not always give the same results. The good effects of mercurial

treatment during pregnancy are undoubted. Every syphilitic woman who becomes pregnant should take a course of mercurial treatment.

**Checking the Secretion of the Lactating Breast.**—H. J. Storrs (*Surg. Gyn. Obst.*, Oct., 1909) reports that the following method has been employed as a matter of routine in all cases in the obstetrical department of the Johns Hopkins Hospital whenever it was desired to dry up the breasts. When the child is born dead, or suckling contraindicated for any reason, the breasts are left absolutely alone for the days immediately following labor. Ordinarily they become considerably engorged about the third day, and occasionally quite painful; the patient, however, is told that the swelling and pain will promptly disappear and that no treatment is necessary. Within the course of twenty-four or thirty-six hours, the swelling begins to subside, after which the secretion gradually diminishes in amount, to disappear entirely before the end of the week. When the breasts are large and pendulous, a loosely fitting bandage is applied to keep them from sagging, but not to exert pressure, and probably once in twenty cases a single hypodermic of morphia or codia may be necessary to relieve pain during the period of active engorgement. During the past four years the use of the breast-pump, belladonna plasters, and tight breast bandages has been entirely abandoned. In 171 cases the secretion was checked in the manner described and in no instance did a mammary abscess develop.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**The Beginning of Menstruation in the Japanese, with Observations of the Monthly Periods among the Chinese, Riukiu and Aino Women of Japan.**—M. Yamasaki (*Zent. f. Gyn.*, September 11, 1909) has made careful observations as to the time of the beginning of menstruation in the Japanese and other races inhabiting Japan and Formosa, and the influence of tropical climate on the period of its first occurrence. There are five distinct races inhabiting Japan—Japanese, Ainos, Korean, Chinese, and natives of the country in Formosa. The observations of Japanese women included 4,861 women, the average age of beginning of menstruation being fourteen years and ten months. The earliest menstruation occurred at nine years and seven months, the latest at twenty-one years and ten months. From collected observations of fourteen authors, numbering 26,082 women, the average was fifteen years and eighteen days. The Chinese women observed were all residents of Formosa who had emigrated from China long ago. There were 135 cases, the earliest menstruation being eleven years, the average seventeen years. Although the climate of Formosa is warmer than that of Japan the first menstruation occurred later than in Japan. Of the Riukiu women there were 184. Among them

the average was seventeen years. Here the beginning of puberty is still later than among the Japanese, although the climate is warmer than that where the Japanese races live, and colder than that of Formosa. Among the Ainos there were eighty-four women examined. The average here is fifteen years. The results with reference to climate are the opposite of those generally given. The general opinion seems to be that race and manner of life has a greater influence on puberty than climate. The four races show very little difference, although their mode of life varies greatly. The Chinese women live entirely in the house, and the Ainos hunt and work in the fields.

**Appendicitis and Maladies of the Adnexa.**—Paul Segond (*Ann. de gyn. et d'obst.*, October, 1909) says that appendicitis is frequently coexistent with phlegmasias and tumors of the adnexa, and with pregnancy and the puerperal state. Aside from those instances in which the coexistence of the lesions is a coincidence, there are many cases in which there is a relation of cause and effect between them. All these organs may be inclosed in a single mass of suppuration and inflammation in acute cases; in chronic cases all degrees of lesions are seen from simple fibrous bands connecting them to masses of sclerosis including appendix, adnexa, and uterus in a block of adhesions. Appendiculo-adnexitis may complicate normal or extrauterine pregnancy. The first reason for these conditions is in the close relations of position of these organs. The communication occurs through the peritoneum itself. False membranes are formed extending from the adnexa, which capture the appendix, inclose it, and produce a peri-appendicitis first, and then a typical appendicitis. On the other hand, the condition may begin with the appendix, and the same false membranes may grasp the adnexa and cause a perisalpingitis. The differential diagnosis is here very difficult. In acute conditions an error is particularly grave because it may result in operation on an acutely suppurating salpingitis which should have been allowed to wait until the inflammation had subsided; or it may cause delay of operation in a toxi-infectious appendicitis until it is too late to save the patient. Our best guide is palpation. Fränkel's sign consists in taking the uterus between two fingers and moving it from side to side. If now there is pain in the region of the adnexa there is an involvement of these organs. If there is no pain there is probably an appendicitis. We must study the location of the pain, its irradiations, and its effect on menstruation, the intensity of the gastrointestinal symptoms, the degree of temperature, and the expression of the face. Pain high up is in favor of involvement of the appendix; low down, of the adnexa. A question of importance in such cases is whether to make a median or a lateral incision.

A lateral incision is found to be too small if it becomes necessary to remove the adnexa, while a median incision is unnecessarily large for removal of an appendix alone. But both of these

conditions may coexist. Appendicitis of adnexal origin has a slow course; a gonorrheal infection has begun the trouble; there is a plastic or suppurative pelviperitonitis situated low down in the pelvis, involving Douglas' culdesac; menstruation is painful; there is leukorrhea; signs of appendicial and adnexal troubles are combined. Retrodeviation of the uterus may be caused by adhesions left from an appendicitis, or a pelviperitonitis. Sterility may be caused by closure of the tube by adhesions left after appendicitis. We should not allow ourselves to be so hypnotized by McBurney's point as to do an appendectomy when we have only a typhlo-colitis, nephroptosis, or a simple appendix phobia. When an acute toxi-infectious appendicitis occurs in the course of pregnancy, extra-uterine pregnancy, or with fibroma uteri or ovarian cyst, the diagnosis is especially obscure; but with grave symptoms, operation is indicated in all these conditions, and the diagnosis may be made after the abdomen has been opened. With fibromata the involvement of the appendix will contraindicate a vaginal hysterectomy. In all cases of suppuration the indication is to evacuate the pus. Every appendix should be carefully examined when it is encountered in the course of a laparotomy for whatever cause, and removed when involved.

**Final Results of Conservative Ovarian Surgery.**—In examining his records of 300 cases of ovarian resection, J. O. Polak (*Jour. Amer. Med. Assn.*, 1909, liii, 1382) found 163 with pathological reports. In ninety cases the diseased structures belonged to the class of multiple cystic ovaries, presenting numberless small cysts throughout the ovarian structure. In fifty-five of these cases one ovary was ablated, leaving one good ovary, while thirty-five were resected. But five complete cures are recorded; twenty-one patients returned for further surgery. It would seem that multiple cystic degeneration was least favorable to conservative procedures, while ovaries containing retention cysts, cysts of the corpora lutea, large monocular cysts, fibroids and dermoids may be conserved by resection with considerable hope for the patient's continued well-being.

**Epilepsy in Relation to Menstrual Periods.**—A. Gordon (*N. Y. Med. Jour.*, 1909, xc, 733) has collected twenty-three cases of epilepsy in whom the seizures coincided with the periods of menstruation. They were totally free from attacks and enjoyed good health in the intervals between the menses; of these, only five presented dysmenorrheic symptoms, but without apparent disease of the ovaries. A course of gynecological treatment improved the condition, but did not totally remove it. As the epilepsy continued in spite of the improvement, the presumption was in favor of the view that the irregularity and abnormality of menstruation have not much to do with the seizures. If we take into consideration the fact that the remaining eighteen patients did not present dysmenorrheic symptoms, it is evident that disturbed menstruation has no bearing upon the causation

of epilepsy. The usual bromide treatment kept up continuously succeeded in some of the cases in arresting the attacks for one or two months, but the latter eventually returned with the same regularity as before. Every one of the twenty-three patients was placed upon thyroid. The dry extract was given at first in gr. iii doses, three times a day, and at the end of two weeks gr. v three times a day. During the entire month or for a period of three weeks, according to the case, between the menstrual flows thyroid extract was given, but about three or five days before the onset of the menses it was discontinued and the bromide given instead. As soon as the flow ceased, the thyroid treatment was resumed. The result was very satisfactory. All the patients benefited considerably, some more than others. The best results were obtained in the fourteen cases in which the convulsions occurred a day or two before the menstrual flow.

**Mental Alienation in Women and Abdomino-pelvic Disease.**—W. P. Manton (*Jour. Amer. Med. Assn.*, Oct. 2, 1909) refers to the fact that it has always been a popular notion, fostered no doubt by indiscreet and thoughtless observations on the part of the profession, that insanity in women is most frequently the direct result of a diseased condition or perverted function of the organs of generation, and hence it has been believed that the restoration of these parts to a normal state, either by repair of defects or the removal of pathologic structures, would lead to renewed mental health. To those who have had the largest opportunity to study these questions, however, experience has shown that this is not altogether true. But whether a cure of the insanity is effected or not, it is certain that improvement in the mental condition is likely to supervene from the removal of the focus of irritation; the subject is rendered more comfortable and therefore becomes more tractable, and through this is often changed from an untidy, refractory patient to a clean, industrious, and orderly individual.

**Irrigation and Drainage in Obstetrical and Gynecological Operations.**—H. G. Wetherill (*Jour. Amer. Med. Assn.*, Oct. 2, 1909) say that the majority of the best surgeons limit the use of intraabdominal irrigation and drainage to few and to certain specific indications, chief of which are rupture or leakage from some hollow viscus or localized abscess which has poured into the abdominal cavity food, urine, pus or blood in considerable quantities. Glass drains are now rarely used even in the abdomen, and by only a very few operators. Gauze, always an indifferent drain, is more often employed for packing and walling off infected areas, arresting oozing of blood which may otherwise be difficult to control and for guarding against fecal and urinary infiltration into the tissues, and leaks into the cavities of the body when the hollow viscera have been injured or sutured. When intraperitoneal drainage is necessary it is preferable to make it downward through the vagina. Routine irrigations in

obstetrics and gynecology are condemned, especially after uncomplicated normal labors. Drainage of the uterus and bladder under certain conditions may be indispensable. When irrigation of these cavities is necessary it should be made with nonpoisonous solutions, and in the main with a view to their mechanical effect in flushing the cavity as in contradistinction to their chemical and antiseptic effect. Low hydrostatic pressure should be employed and ample provision must be made for the return flow of the flushing fluid. The writer calls attention to his rubber tube for irrigation and drainage.

**Inflammatory Tuberculosis, Dysmenorrhea of Tuberculous Origin.**—Gaston Cotte (*Gaz. des Hôp.*, Oct. 12, 1909) states that tuberculosis as a cause of dysmenorrhea has been left out of consideration. An aggravation of pulmonary lesions has been noted at the time of the periods; the facility with which tuberculosis develops at puberty has been noted by others, while many cases of tuberculosis have coincident menstrual troubles. Disturbances of regularity and character of menstruation are observed in tuberculous subjects. Of seventy women treated for tuberculosis, all of whom had dysmenorrhea, forty were entirely cured of their dysmenorrhea by tuberculin. Most of these patients had begun to have dysmenorrhea when the tuberculous disease began. These symptoms, together with anemic vertigo, palpitation, pain in the stomach, and anorexia seem to be manifestations of the tuberculous toxemia. Their beginning coincides with the beginning of their general troubles. When the toxins are eliminated recovery from the uterine symptoms occurs.

**Malignity of Benign Tumors of the Breast.**—Lop (*Gaz. des Hôpitaux*, Oct. 18, 1909) records six observations of supposedly benign tumors of the breast which were not operated upon when they were first found, but which underwent malignant degeneration and necessitated extirpation of the gland, and resulted fatally. The adeno-fibromata and adenomata of the breast have lost their reputation for benignity. After they have shown malignancy it is too late for a successful operation. The tumors shown by the author's cases were insidious in their beginning, and only slight traumata of the pectoral region caused them to be noticed. Their mobility was perfect; there were transient enlargement and pain at menstruation. Secondary involvement of the glands was not seen, and there was no deformity or retraction of the breast. Had these cases been operated upon at once they might have recovered. All neoplasms of the breast should be freely excised as soon as seen.

**The Sacroiliac Joint.**—According to F. H. Albee (*Jour. Amer. Med. Assn.*, Oct. 16, 1909), the sacroiliac articulation has all the elements of a joint and therefore has a similar pathology. It has motion and plays an important rôle in labor. Its variation, according to individual, age, or sex, is very slight. Its anatomy is such that drainage into the pelvis is very apt to occur, and, therefore, in the event of infection, early posterior drainage is

often indicated. Its affections are, undoubtedly, the cause of many obscure and unexplained backaches and persistent sciaticas. The important ligaments of this joint are so placed that the sacrum and the ilium swing open in the event of a symphysiotomy and little permanent damage results, even if the pubic separation has been great enough to rupture the unimportant anterior-inferior part of the capsule. The relaxation of this articulation should be guarded against by support of the lumbar spine with pillows, etc., in cases of protracted postoperative convalescence.

**Enucleation of Uterine Myomas.**—E. E. Montgomery (*Jour. Amer. Med. Assn.*, Oct. 16, 1909) favors the enucleation of uterine fibroids when the growths are few in number and the structure of the uterus is but little involved; when they are readily accessible through the vagina or cervical canal; when the woman, whether unmarried or married, is under forty years of age, and particularly when she is childless or has but one or two children; when the tubes and ovaries are free from complicating conditions. He condemns the operation when the woman affected has reached the age of forty, as with the changing conditions incident to the climacteric, the tendency to degenerative processes is increased. He considers it inadvisable when the uterus is spread out by the growth or growths to such a degree that the reconstruction of a functioning uterus will not be feasible, and when the tumors are so distributed in the structure of the uterus that the circulation will be greatly affected in the necessary suturing to replace the disordered structures.

**Wassermann Reaction in Different Periods of Syphilis.**—P. Minassian and O. Viana (*Folia Ginecologia*, vol. ii, F. 1, 1909) experimented on the application of the Wassermann reaction in sixty individuals having syphilis in various stages, with positive reactions in many cases. In the primary period it was positive in 25 to 30; in the secondary period it reached 86 to 87 per cent. of positive reactions; in the tertiary period 83 to 84 per cent. were positive. Its value is less in the primary stage than in the later periods of the disease. Its specific action was shown in many cases, and in some it was the only element in the diagnosis. As antigen the reextract of syphilitic liver is most valuable, its results are more constant than that of the other tissues. The syphilitic antibodies were found in the milk, amniotic fluid, pemphigus bullæ, and the fluid of syphilitic hydrocele. The mercurial treatment did not sensibly influence the presence of this reaction. In nonsyphilitic individuals the search for antibodies always yielded negative results. The presence of the Wassermann reaction makes the diagnosis of syphilis positive, but its absence is not a proof of the nonexistence of the disease.

# DEPARTMENT OF PEDIATRICS.

## ORIGINAL COMMUNICATIONS.

### GASTRIC ULCER IN CHILDHOOD.\*

BY

L. M. BOWES, M. D.,

Assistant in Medicine, Rush Medical College,  
Chicago, Ill.

GASTRIC ulcer is a very rare disease in childhood, more particularly between the ages of one and ten years.

This is due to the facts that the stomach rapidly empties its food contents into the intestines; that there is a small amount of hydrochloric acid secreted, and the extreme rarity of hyperacidity.

In the literature I have been able to find fifty-two cases. One in a fetus was reported by Carteaux, and one in a newborn child which was reported by Cocks. There were seven cases under one year; nine between the ages of one and five years; seven between the ages of five and ten years; eighteen between the ages of ten and fifteen years, and four at sixteen years of age. Chrostek also reported a case in a girl of eighteen who had a chronic ulcer that dated from her fourth year. In four cases the age was not given.

Gastric ulcer predominates in the female, in childhood as in later periods of life. In these cases thirteen were in males; twenty-seven in females, and in twelve the sex was not given.

#### CAUSES.

1. There may be erosions caused by slight injuries or defects in the epithelium of the mucous membrane of the stomach, which under normal conditions heal promptly, but when there is hyperacidity, the healing is hindered. 2. There may be hemorrhagic extravasations, due to passive hyperæmia, due to an uncompensated valvular heart lesion or to a dilated heart complicating chronic pulmonary disease. Or they may be

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found in the nutritional and blood diseases, as scurvy, anemia, chlorosis, purpura, leukemia, hemophilia, and jaundice. Anemia and chlorosis not only predispose to ulcer, but prevent the healing. According to the experiments of Quincke and Daetwyler, hyperacidity is frequent in chlorosis. 3. Hyperacidity is a large factor in the prevention of healing. Fischer says, "If an excess of hydrochloric acid is found in addition to the subjective symptoms of pain, the diagnosis of gastric ulcer is positive."

According to C. Mansell Moullin, an excess of free hydrochloric acid is present at one time or another in three-fourths of all cases. Nothnagel's "Encyclopedia of Practical Medicine" says: "It is generally recognized, as a rule, present in ulcer of the stomach. Some authors are undecided whether or not hyperchlorhydria is the cause or effect of the ulcer; I am of the opinion that hyperchlorhydria is neither the cause nor effect of ulcer. The relationship must be interpreted as follows: If hyperchlorhydria is present, much less favorable conditions for the repair of the injured mucous membrane of the stomach are given than if the acidity of the stomach is normal."

There is, normally, about one-fourth of 1 per cent. of free hydrochloric acid in the gastric juice in infants. Hyperchlorhydria and hyperacidity are extremely rare in infants and young children, but are present in the majority of cases of gastric ulcer in older children and adults.

4. Gastric ulcer may be of infectious origin as when it is a complication in tuberculosis, measles, typhoid fever, pneumonia, noma, diphtheria and empyema.

5. Ebstein reports the occurrence together of gastric ulcer and trichinosis. The patient was a young girl who had eaten large quantities of meat containing trichinæ. The autopsy revealed the presence of five round ulcers in the pyloric region of the stomach.

6. The ulcer may be the result of a thrombus or embolus. Emboli consisting of masses of bacteria closing up the smallest vessels of the mucosa (Adler). "Thrombosis of the umbilical vein and of its small ramifications and local embolisms in the wall of the stomach, some of which depend on congenital diseases of the heart" (A. Jacobi).

7. Follicular ulcer is caused by irritation of one or more inflamed lymphoid follicles in the mucous membrane of the stomach, followed by enlargement, the breaking down of the follicles leaving a superficial erosion. Probably the majority of these

eroded follicles heal promptly, but in case the irritation continues one or more erosions may persist, enlarge, and form an ulcer. Therefore there may be one or more ulcers at the same time, or fresh ones may develop at intervals, giving rise to recurrent ulcer. In these cases the patient may feel perfectly well for months at a time and then suddenly all the symptoms return. These cases are not chronic, but recurrent acute ulcers.

8. True peptic ulcer may be an advanced stage of follicular ulcer. The latter being acted upon by the gastric juice and producing the true peptic ulcer. Ewald (*Deutsche Klinik*, p. 459) supports this view, and Gerhardt (*Virchow's Archiv*, Band cxxvii, p. 85) furnishes examples of erosions changed into true peptic ulcers. Erosions and ulcers are often found together.

*Symptoms.*—Pain is the most common symptom found. It may be caused by oversecretion, overdistention of the stomach, by undue peristalsis, or by pressure. The pain and tenderness are either in the median line or slightly to the left, below the ensiform. In older children there may be shooting pain from front to back, located between the ninth and tenth dorsal vertebræ. Pain may be caused by cold. It may be due to adhesions. It has been proven by cutting, pinching with the artery forceps, and burning with the actual cautery, without the patients' feeling it, that the lining of the stomach has no sensation. Therefore, the cause must be something which is not always present, as we do not always have pain. So, according to Moullin, "the real cause is the dragging of the stomach upon that portion of the parietal peritoneum which lines the undersurface of the diaphragm. This, like the rest of the parietal peritoneum, and unlike that which covers the viscera, is normally very sensitive." According to Lennander, it owes its sensitiveness to filaments of the cerebrospinal nerves distributed in the subserous areolar tissue.

"If there is no absorption from the surface of the ulcer or if the ulcer is so situated that the irritation spreading from it does not affect the parietal peritoneum, there is no pain and the presence of the ulcer may be unknown." This explains why we may have ulcers rupture with no previous symptoms and without our knowing of their presence. When the irritation ceases, the pain ceases and the ulcer begins to heal. This explains the characteristic shooting pain from front to back in older children and adults. Also why the pain commences immediately with the taking of food, increasing with the increase

in peristaltic action, and stopping when the peristalsis stops after the stomach empties its contents into the intestines. Pain is seldom recognized in ulcer in infants, but becomes more common as the child increases in age.

*Vomiting* is more common in infants and less common in older children. It is caused mostly by hyperacidity.

*Hemorrhage* is next in frequency. There may be either liquid or clotted blood in the vomitus. The liquid blood may be either bright red or black, depending upon whether it is vomited immediately after the hemorrhage or after the stomach secretions have had time to partially digest it. We can accept it as a diagnostic factor only after a thorough examination of the nose, throat, mouth, esophagus, and mother's breast in case of nursing infants. Blood may be detected in the stools by the guaiac test. The stools are black or dark brown in color, caused by digested blood. An examination must be made for rectal polypi, varicosities, or erosions of the anus. But in these conditions the blood is undigested. There may be no hemorrhage or there may be blood in both vomitus and stool or in either without its being present in the other.

*Fever* may be present. But when present it usually indicates a complication or septic process. It has been noted in a considerable number of cases, even running as high as 106°. Cutler reports a temperature of 102° in a girl of six years of age and 101° in a child of eight years of age. Constipation is a very common condition.

*Prognosis.*—Ulcer of the stomach is usually fatal in infants, but the mortality decreases as the child increases in years.

Deaths from ulcer of the stomach in New York City for the ten years from 1886 to 1896 by age are as follows: Under one year, seven; one and under five, six; five and under ten, six; ten and under fifteen, three, making a total of twenty-two.

*Diagnosis.*—In making a diagnosis of gastric ulcer in children we have to take into consideration the general findings in the case. If there is the characteristic pain and tenderness, vomiting with hyperacidity, we are justified in making the diagnosis. If blood is present in vomitus or stool also, the diagnosis is certain, providing the bleeding could not possibly be from nose, mouth, throat, esophagus, or, in case of infants, swallowed in nursing.

*Treatment.*—Owing to the fact that all the wounds of the stomach tend to heal promptly even where the entire thickness of the wall is involved, and even where an ulcer is excised,

except when the patient is absolutely exhausted by hemorrhage or starvation, the failure of an ulcer to heal must be in connection with the ulcer and in the process of digestion. That is to say, the irritation which food causes by increasing peristalsis and acidity. Therefore our treatment must follow along these lines, namely, to give no food by mouth and neutralize the hyperacidity. The patient should be kept in bed. In case of pain enough morphine must be given to get relief.

In case of hemorrhage an ice bag to the abdomen has been advised, but as cold tends to increase peristalsis it would seem that this measure would tend to increase both pain and hemorrhage. Iron is indicated in anemic patients and chlorotic girls.

Feeding should be commenced very slowly after the acute symptoms have subsided, commencing with milk eaten with a spoon to avoid coagulating into a large mass.

The giving of solid food must be added very carefully as, in my case, the eating of a very small piece of toast caused a severe hemorrhage, and three tablespoonfuls of egg-nog caused intense pain.

For the neutralizing of the acidity the alkalies and some form of bismuth are required. The subnitrate is good, but the subcarbonate is less irritating and hence is better. As constipation is so common, it is better to avoid the drugs which increase this condition when possible.

In chronic cases eighth- to quarter-grain doses of silver nitrate, in pill form, are of great benefit.

Some mention should be made of the advisability of attempting rectal feeding in these cases. In infants and young children this would be extremely difficult or impossible owing to the inability to obtain the cooperation of the patient. In certain cases in children over ten it might be feasible.

#### REPORT OF CASE.

The patient was a girl eight years and nine months of age, who had always lived in the good surroundings and conditions of a farm.

The family history is negative. The father and mother, one brother, and three sisters, all in robust health.

The birth of the child was normal. She was taken sick at three weeks of age with bronchopneumonia and never was quite well. She had several attacks of follicular tonsillitis, scarlet fever and slight attacks of palpitation of heart. During the first week of her illness she complained of malaise and nausea, vomited

once, complained of a sharp pain especially after taking any thing cold, as ice cream. Bowels constipated.

On the night of July 31 the patient was suddenly taken sick with sharp shooting pain in the epigastric region and vomited once. The vomitus was highly acid and contained black liquid blood and a large clot.

The pulse ran from 100 to 110 and temperature 100 to 101.5° for one week. The child was anemic and poorly nourished. The mouth was red and inflamed. Tongue was slightly swollen, and epithelial desquamation was present. The tonsils were large and red. The throat red. The mouth was acid in reaction. The lungs were negative. The heart was slightly hypertrophied and a mitral regurgitant murmur present.

There was an area of tenderness about the size of a silver dollar slightly to the left of the midline in the epigastric region. The abdomen was otherwise negative.

The urine was acid. No albumin and no sugar present.

The pain disappeared on August 7, the eighth day after the sudden attack. And there was blood in the stools until August 9, two days later or the tenth day after the acute attack. There was no tenderness after August 11.

The pain was controlled by morphine.

The alkalies were given to neutralize the acidity.

Although four months have passed, there has been no recurrence.

#### BIBLIOGRAPHY.

- Adler. *Amer. Jour. of Medical Sciences*, Jan., 1907.  
Ewald. *Deutsche Klinik*, p. 459.  
Fischer. *Diseases of Children*.  
Gerhardt. *Virchow's Archiv.*, Band cxxvii, p. 85.  
Holt. *The Diseases of Infancy and Childhood*.  
Jacobi. *New York Medical Journal*, Oct. 30, 1909.  
Koplik. *Diseases of Infancy and Childhood*.  
Moullin. *The Surgical Treatment of Ulcer of the Stomach*.  
Nothnagel. *Diseases of the Stomach*.  
Osler. *Practice of Medicine*.  
Pfaundler and Schlossmann. *The Diseases of Children*.  
Sajou's *Analytical Cyclopedia of Practical Medicine*.  
Stowell. *Medical Record*, July 8, 1905.  
Van Valzah and Nisbet. *Diseases of the Stomach*.

6031 CIRCLE AVENUE.

## VAGINITIS.\*

BY

WILLIAM BERTRAM MEISTER, M. D.,

Attending Pediatricist to Polhemus Memorial Clinic; Attending Pediatricist to the Brooklyn Home for Consumptives, Etc.

VAGINITIS is a catarrhal inflammation of the mucous membrane of the vagina, characterized chiefly by a mucopurulent discharge and a tendency, in older children, to invade the mucous membranes of the urethra, the bladder, the uterus and the Fallopian tubes, and even the peritoneum.

It may be divided into three classes, according to the etiology; simple, specific (or gonorrheal), and diphtheritic. The latter, because of its rarity, its easy diagnosis, and the specificity of its treatment, may be dismissed.

*Etiology.*—Simple vaginitis may occur during infancy, but is usually seen in those over two years of age. Those whose resistance has been diminished by malnutrition, anemia, and acute infectious diseases are frequently victims. It is often met with during the course of measles and varicella. Traumatism from the introduction of foreign bodies, masturbation, and attempted rape may cause simple vaginitis. The great contributory cause is uncleanness: pin-worms and bacilli coli communis make the trip from rectum to vagina by way of the soiled diaper. Scabies may be mentioned as another not infrequent cause.

Gonorrheal vaginitis must primarily be laid at the door of the diplococcus of Neisser. Of perhaps greater interest than the gonococcus in this connection, however, is its mode of conveyance. Institutions of high and low degree, boarding schools, hospitals, asylums, etc., seem to be the happy hunting-ground of this infection. Holt found, in a routine examination of the vaginal discharges from the inmates of various institutions, from 2 to 10 per cent. positive at times when specific vaginitis was not considered to be epidemic.

Epidemics are frequent occurrences, and are detected easily enough when trained attendants and physicians are parts of the institutions. In institutions and boarding schools without medi-

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cal supervision, in out-patient and dispensary practice, and in private families gonorrheal vaginitis is perhaps more common but less under control, and therefore relatively more dangerous.

In an institution, only a primary case is necessary. A little carelessness will do the rest. And when once an epidemic has begun, only the strictest hygiene will prevent its rapid spread. The commonest fomites are napkins, towels, wash-cloths, under-clothing, bed linen, rectal syringes (carelessly inserted), thermometers, bath-tubs, bath-water, and the hands of nurse or attendant. In private families, in addition to the above-mentioned factors, direct contact with an infected mother or nurse and rape must be considered. One very plausible mode of infection seems to have been generally overlooked. Most of us take the precaution to instill nitrate of silver into the eyelids of the newly born as a routine measure, because of the possibility of a future gonorrheal ophthalmia. Granting that ophthalmia may be contracted during delivery, it requires no great stretch of the imagination to presume that vaginitis too may be contracted en route through an infected birth canal.

*Pathology.*—The pathological changes in both forms are those of a simple catarrhal inflammation. The mucous membrane is at first red, swollen, and dry. The papillæ project as a result of cell infiltration, and give to the involved surface a granular appearance. Later, local secretion is abnormally increased, and may be mucoid, muco-purulent or purulent; it is usually foul-smelling. The tops of the papillæ are exfoliated and the surface becomes raw and reddened; these raw surfaces appear as localized spots; in long-standing cases they become cicatrized and cause different degrees of atresia. The labia and the inner sides of the thighs, in neglected cases, are excoriated from the irritating discharge.

*Symptoms.*—In both types of the disease, the symptoms are similar and relatively few in number. Both begin as a subacute inflammation. There may be a rise in temperature of one or two degrees and some lassitude at the onset. These are the only constitutional symptoms in uncomplicated cases. There is rarely any pain or discomfort in mild cases. In severe cases some pain and scalding during urination may be complained of, especially in the simple type. If urination be painful or frequent in the gonorrheal type, urethritis probably exists. In many cases the only symptom is the discharge. This in both types of the disease is at first thin and scanty; later, copious, thick,

greenish-yellow and very ill-smelling. It may contain traces of blood from the excoriated patches of mucous membrane.

Its microscopical characteristics are better considered under diagnosis. In older girls (those over ten) the discharge forms thick yellow crusts in the labial fissure.

*Complications.*—In young children with gonorrheal vaginitis and in all children with simple vaginitis, the complications are usually few. There may be vulvitis, dermatitis of the inner sides of the thighs, and enlargement of the inguinal glands. Involvement of the urethra and bladder are seldom seen. But in older children with the gonorrheal type, the complications may be many and are much more destructive than the primary vaginitis. Conjunctivitis is probably the most frequent one because of the careless manner in which young children transfer their fingers from one part to another.

Inguinal adenitis and urethritis are very common; inflammation of the bladder a little less so. Endometritis, salpingitis and peritonitis occur frequently enough to warrant the same care in diagnosis and treatment in children as is exercised for adults. Proctitis, endo- and pericarditis and arthritis are occasionally seen in the course of a specific vaginitis.

There should be no sequelæ in a thoroughly cured case. The only possible one is a partial atresia vaginæ in a case which came under treatment late in the disease.

*Diagnosis.*—The diagnosis of vaginitis itself is a very simple matter, but the diagnosis of the kind is more complex, and upon it depends so much that it behooves one to be most careful. If, in a given case, the history points to masturbation, if the pin-worm can be demonstrated, if a foreign body is located, etc., the natural conclusion arrived at is that here is a simple vaginitis. But is it fair to assume so much? Is it not possible and even probable that the gonococcus is the chief etiological factor, and that the others are only incidental?

A bacterial examination is imperative in every case, and, unfortunately, it can only help us in one direction. If gonococci can be demonstrated, then we may be certain that we have to deal with a specific vaginitis, but, as in tuberculosis, their absence proves nothing. Under the microscope, the gonorrheal discharge is seen to contain large numbers of diplococci, which are generally the only bacteria present, and if found in the pus cells they are considered diagnostic. Stained by Gram's method, they are distinguished from other diplococci which

may be present. If available, the services of a trained bacteriologist should be enlisted to diagnosticate the gonococci by means of their cultural characteristics. So much for a positive diagnosis of specificity. But what about a negative one? Why not follow the example of the genitourinary surgeon? If the first smear be negative, swab the vagina with a strong solution of nitrate of silver to light up a process which may possibly be dormant; then examine another smear; repeat the process several times and if the last examination be negative also, a reasonable diagnosis against the gonococcus may safely be made.

*Prophylaxis.*—Prophylaxis against a given malady must, of necessity, be aimed at all such etiological factors as are under control. Therefore combat anemia and malnutrition with suitable tonic treatment. Prevent masturbation by advising the avoidance of local irritation of the genitalia by attendants, of feather-beds, and of excessive animal food. Advise that a child sleep alone and that it arise immediately after awakening. Advise cold sponging, and, if necessary, timely punishment without dwelling too long on the subject. If the stools contain pin-worms, treat appropriately and advise the prompt removal of soiled napkins.

The contagious character of gonorrheal vaginitis makes special prophylactic measures imperative. This is particularly true in institutions. When a child is admitted it should be examined for vaginal discharge, and quarantined if one be present, until a negative diagnosis can be determined or a cure effected. Attendants should be quarantined as well as the children who have specific vaginitis. Napkins, towels, wash-cloths, under-clothing, bed linen, etc., used on the patient should be soaked in strong carbolic solutions and then boiled. Syringes, thermometers, bath-tubs, and the hands of the nurse should be thoroughly disinfected. Prompt detection and isolation of a primary case will usually prevent an epidemic.

In the home special etiological factors are to be met. Swab the labia and the vagina of the newly-born infant with a 2 per cent. silver nitrate solution, and follow this action in five minutes with an irrigation of warm saturated boric acid solution through a soft-rubber catheter. Direct that infants and older children sleep alone, and that all articles used or worn near the vulva be kept for individual use and that they be thoroughly boiled when washed.

*Treatment.*—The first steps in the treatment of acute cases of

vaginitis with fever are rest in bed and nourishing food. Allow the patient large quantities of fluid between meals. The bowels should be thoroughly evacuated once and then regulated. If pin-worms are found in the vagina, injections of warm cod-liver oil, or garlic decoctions, will remove them. Those in the intestines are driven to the rectum by one-half grain doses of san-tonin given three times per day and are evacuated by means of rectal irrigation with water, vinegar water, or warm cod-liver oil.

If a positive diagnosis of simple vaginitis can be made, irrigation of the vagina with warm saturated solution of boric acid or bichloride of mercury, 1-5,000, one quart, two or three times daily, will clear up the discharge and the mucous membrane in two or three weeks. But to my mind it would be safer to regard every case of vaginal catarrh as gonorrheal, to treat the condition as such, and to treat any other apparent causes, such as pin-worms, as incidentals. This, especially in long-standing cases, in which a few gonococci may be present and escape detection.

Argyrol 10 per cent., protargol 5 per cent., albargin 5 per cent., and a host of other organic silver salts may be used in irrigations (one quart two or three times daily) with excellent results. In severe cases astringent injections of alum, of zinc sulphate, or of tannic acid (all two drams to the quart), twice daily, are indicated to lessen the discharge. The irrigations are most easily given through a soft-rubber male catheter. In older children it may be practical to make local applications to the vaginal mucous membrane after thorough drying with sterile cotton swabs. For such treatment, solutions of argyrol 20 per cent., albargin 10 per cent., protargol 10 per cent., and silver nitrate 1-1,000 are recommended. Applications are to be made once or twice daily.

Mutilation of the hymen is seldom necessary in order to carry out the local treatment, but if so it is a means which is justified by the end in view.

The vulva and the thighs should be protected by extraordinary cleanliness and the use of emollient ointments. If a dermatitis exists, zinc or bismuth powders, frequently and liberally applied, will usually effect a prompt cure.

A consideration of the treatment of complications would lead us beyond the confines of pediatrics and may be dispensed with here.

A troublesome sequela, atresia, is occasionally met with and is overcome by dilatation, or, if necessary, incision and dilatation.

Active treatment in a given case may be strung out for weeks and months, but, at any rate, no case should be discharged as cured until repeated examinations of smears, and if possible cultures, fail to demonstrate the presence of gonococci.

150 PUTNAM AVENUE.

## PERTUSSIS.\*

BY

JAMES MACEVITT, M. D.,

Associate Visiting Physician St. Mark's Hospital,  
Brooklyn, N. Y.

My reasons for selecting pertussis as a subject for a paper this evening are many, the principal being that it is one of the most distressing, one of the most neglected, one of the most contagious, and one of the most *common* of all the diseases of childhood.

The laity in general have an idea that nothing can be done to cure or relieve the paroxysms. I know of some physicians who hold the same false ideas and that they do not even try to cure, but are cold-blooded enough to say, "Let them whoop." Now, there is much we can do. By our efforts, both combined and individual, we should be able to find some way to make an early diagnosis and adopt some method which will abort this distressing disease.

There is no history of pertussis previous to 1578. At that time Ballou described an epidemic which occurred at Paris and spoke of it as an affection not previously known. Little or nothing more was heard of it for about a hundred years, when Willis wrote of "*Tussis puerorum convulsiva*" in such a manner that its nature and its identity with the pertussis of to-day admits of no doubt. Until the eighteenth century epidemics were infrequent, but the disease then spread rapidly and by the middle of that century had become widely diffused. It has steadily increased, until it now constitutes one of the most common diseases of childhood. You may be surprised that good authorities consider it the cause of more deaths to-day than any other infectious disease. It does not kill directly through the means of a specific poison, as do diphtheria and scarlatina, but by reason of its prolonged course and its many complications.

*Etiology.*—Certain factors seem to exercise a decidedly predisposing influence upon the development of pertussis. There is a very distinct tendency shown for it to occur in epidemics,

\* Read before the Alumni Association of St. Mary's Hospital, January 25, 1910.

appearing at intervals of about two years, yet with no great regularity in this respect. In the larger cities it is practically endemic, although at times greatly more prevalent than at others. Although it may affect persons of any age, it is generally seen in young children, and, as a rule, occurs but once in the same individual.

While in later childhood pertussis may be ranked as one of the milder infectious diseases, in infancy it is one of the most fatal. That there is an intimate association between epidemics of measles and whooping-cough is a well-recognized fact and it is widely believed that the existence of the first disease strongly predisposes to a later development of the other. Whether or not the association is accidental is still unsettled. Griffith, Rotch, and others say that weakly, sickly children contract whooping-cough more readily than those in good health. Kerley claims the previous state of health appears to exert no influence as far as susceptibility is concerned. The strong and the delicate are alike predisposed to this infection. My experience leads me to agree with Kerley's statement, except as to the season of its greater prevalence, in which I am more in accord with Holt, who holds that it is twice as prevalent in the winter and spring as in the summer and autumn. I agree with Kerley when he says that it is not his experience that the advent of diphtheria or scarlatina shortens the attack of pertussis, as many authorities claim. Other affections which develop during an attack multiply the danger to the patient. Statistics comprising the records of one clinic for thirty-four years show that about one-half of the cases were under two years of age. The younger the child, the more do I dread the complications.

Evidence is accumulating that an organism identical with, or related to, the influenza bacillus has a causal relation to whooping-cough. A leukocytosis is present in almost all cases and a lymphocytosis is found during the catarrhal stage in over 90 per cent. of the cases. The early lymphocytosis is considered of diagnostic value. From our knowledge at the present time it is almost impossible to make a positive diagnosis of whooping-cough before the whoop develops. As an early diagnosis is essential, I would suggest that we do some research work along these lines, as we have in our association a number of clever pathologists and the laboratory facilities at St. Mary's are, I believe, adequate.

Illustrating the extreme infectiousness of pertussis, an emi-

nent authority says that on a bright cold day in December a patient of his, nine months old, passed in its carriage on the street a child of about the same age who had pertussis. This child was also in its carriage. His patient took the disease. There was no other possible source of infection. As a rule, actual contact with or close approach to the sick child is necessary for infection. Cases have been reported which show that whooping-cough is medially contagious through a third person or through material or clothing which has been infected by the sputum of a patient. Some children never contract it though often exposed.

*Pathology.*—There are no pathological lesions distinctive of uncomplicated pertussis. The condition which characterizes the paroxysmal attacks is extreme congestion of the different organs, such as the meninges, the lungs, the heart, and the kidneys. In grave or fatal cases the lesions are those which arise either from mechanical accidents, as emphysema or hemorrhage in various parts, as the eye or the meninges, or from such complicating diseases as bronchopneumonia.

*Infective Period.*—Pertussis may be communicated from the very beginning of the catarrhal stage. Exactly how long a given case may be contagious it is impossible to say positively. It is pretty certain that it is so during the entire spasmodic stage and probably longer.

*Incubation.*—In cases where it could best be determined, it has been found to be from seven to fourteen days, or about the same as measles. If, after exposure, sixteen days have passed without a cough developing, the probabilities are very strong that the disease has not been contracted.

It is customary to divide the course of the disease into three stages: 1. the catarrhal or premonitory stage; 2. the paroxysmal or convulsive stage; 3. the terminal stage, or stage of decline. This classification is very convenient but somewhat artificial, since the stages only very gradually pass into each other and their duration cannot, therefore, be accurately determined.

The symptoms in the beginning, and often for several weeks, are simply those of a bronchitis with a slight rise of temperature and a cough which, though sometimes spasmodic, is often indistinguishable from that of an ordinary bronchitis. Coryza and laryngitis are usually present at this time. After a period varying from a few days to two or three weeks, the cough becomes more severe and of a decidedly spasmodic character, and the

peculiar whoop or kink which characterizes the disease appears. The cause of these paroxysms seems to be a spasm of the larynx. This is accompanied by a feeling of suffocation. The paroxysm begins with a number of short, spasmodic, expiratory coughs succeeded by a long-drawn inspiration and by the peculiar whoop. During the paroxysm, especially in severe cases, the face and mucous membrane become cyanotic, the eyes protrude, the conjunctiva are congested, and the child looks as though it would die of asphyxia. After a few seconds the child, with a convulsive cough, expels some tenacious mucus and is then relieved, or the paroxysm returns again and again subsides, and the symptoms of asphyxia pass away. The most common attendant symptoms of the paroxysm are vomiting and epistaxis. In a young child, vomiting is almost certain to follow if food has been recently taken. Epistaxis sometimes occurs with nearly every severe paroxysm, but in most cases the bleeding is slight. After a very severe paroxysm the child is at times so exhausted as to be hardly able to stand. There is profuse perspiration. The number of severe paroxysms in twenty-four hours varies, according to the severity of the case, from half a dozen to forty or fifty. Paroxysms are often excited by eating or drinking, crying or laughing, exercise, or depression of the tongue with a spatula, and are more frequent during the night than the daytime. In less severe cases, no paroxysms of a marked type occur and no typical whoop may be heard through the attack, but the paroxysmal nature of the cough which continues until the plug of mucus is raised, the watery eyes and the vomiting which follows a paroxysm, stamp the disease as pertussis.

The paroxysms are also modified by intercurrent diseases, especially by attacks of bronchopneumonia, or severe bronchitis. At such times they usually become less frequent and less typical, and may be absent for several days, returning as the complication subsides. The seat of irritation which produces the cough has been located by different observers in different mucous membranes. Some have thought it to be in the nose, others in the trachea, the bronchi, or the larynx. It is probable that it may not always be in the same mucous membrane. The weight of evidence seems to be that in the majority of cases the source of irritation is in the larynx or trachea. Rossbach made laryngoscopic examinations with negative results so far as the larynx was concerned, but he states that a plug of mucus could always be seen in the lower trachea for one or two minutes before the paroxysm occurred.

There is little doubt that this collection of mucus is the exciting cause of the paroxysm, as it is a familiar fact that the paroxysm always continues until this is dislodged. Children are usually very much frightened at the onset of the attack, and run to the mother or nurse for aid, or go to some part of the room where they can be undisturbed during the attack. In certain children, after the severe paroxysms have lasted for some time, a small ulcer is formed on the frenum of the tongue. This is because the frenum is driven against the lower edge of the teeth during a paroxysm. After the disease has lasted for some weeks, there is usually a certain amount of edema of the face, especially under the eyes. The appearance of the edema is often an aid to diagnosis. The course and duration of pertussis is subject to wide variation. In very mild cases the spasmodic stage may last only one or two weeks, but in severe cases, especially in the winter season, it may continue three or four months. After it has entirely ceased, the whoop may return with an attack of bronchitis and continue for a month or more. This is not to be regarded as a true relapse of pertussis. The habit of the paroxysmal cough once established, it tends to recur with every slight bronchitis for months afterward.

*Complications.*—Of the very numerous complications of pertussis, those connected with the respiratory tract are most prominent. Bronchitis may be so in excess of the degree ordinarily present that it constitutes a complication. Bronchopneumonia is one of the most common and most dangerous complications of pertussis and usually runs a tedious course. As it develops, the paroxysmal nature of the cough is liable to disappear. Emphysema is common but generally only temporary. Pleural effusions, emphysema, and croupous pneumonia occur, but not often. Emphysema of the subcutaneous connective tissue has been reported. Edema of the glottis is sometimes seen. Vomiting is generally to be regarded as a symptom of the disease, but the irritability of the stomach may become so great that it constitutes a genuine and very troublesome complication. Loss of appetite, indigestion, and diarrhea, particularly in summer, are common complications. Prolapse of the rectum and hernia may result from the violence of the cough. Hemorrhages from various parts of the body frequently occur during the paroxysms. Convulsions are a dangerous complication, particularly in young subjects. A persistent spasm of the glottis may cause death. Acute nephritis has been quite often reported. Rachitis,

anemia, and other constitutional maladies may complicate or may develop as sequels to pertussis. Tuberculosis often follows.

An illustration of this fact may be had in a case I saw last summer. A bright little girl three years of age contracted pertussis and had bronchopneumonia as a complication. After recovery she was taken to the country to recuperate. About six weeks later I received a letter from the child's father stating that she had died from tubercular meningitis. I feared tuberculosis when I was treating the child for bronchopneumonia, as the mother had a tubercular history.

*Diagnosis.*—This cannot, as a rule, be made until the child whoops. Sometimes, however, where another child in the family has undoubted pertussis, a spasmodic cough may allow the diagnosis to be made before the whoop has developed. It is possible for a child to have pertussis without at any time developing the whoop. At the present time I am attending a family where the mother and four children are affected. Two of the children have a decided whoop; the mother and the two younger children have a spasmodic cough but no whoop. The youngest of the children (one of the nonwhoopers) has bronchitis, but the mother and other child have not. The mother stated that when she was a child her sisters and brother had the whooping-cough. She had a cough at the time but did not whoop. It is significant that the whoop is not always present in pertussis, hence we cannot say that it is pathognomonic of the condition. Neither does an occasional whoop always mean a pertussis.

The diagnosis of pertussis can usually be made by the characteristic swollen condition of the eyes and face, the paroxysmal cough, followed by the expulsion of tough mucus and vomiting, and the long duration of the attack. One authority claims the pink under-eyelid has been his most certain sign.

*Prognosis.*—The most important factor in the prognosis of the disease is the age of the patient. The younger the child, the more unfavorable. The mortality is very much greater under two years of age than after that period, while after the fifth year it is trifling. It is upon the great frequency of the complications that the high rate of mortality depends. In England and Wales 120,000 persons died of it between the years 1858 and 1867. Smith estimates that during fifty years there were 4,840 deaths from it in New York City. The relative mortality as compared with the number of cases of the disease is also larger than is

commonly believed. Statistics vary regarding it, but it may be said to range from 3 to 15 per cent.

Pertussis is a highly contagious disease, and a child suffering from it should be isolated from other children wherever this is possible. Children with pertussis should never be allowed to attend school, church, or any public meetings. All needless exposure should be avoided. Young infants, delicate children, and those with a predisposition to tuberculosis, should be most carefully protected against exposure, since it is in them chiefly that the disease is likely to be serious. It is as undesirable as it is impossible to confine a child with pertussis to a single room during the attack. All those persons for whom exposure would be dangerous should, therefore, be sent away from the house. Quarantine should continue until the spasmodic stage is over. In considering prophylaxis the thought comes to me that it would be a good thing if we could have a law enacted, compelling children with pertussis to wear a distinctive badge or button, easily recognizable by those having other children in charge.

*Treatment.*—The hygienic treatment of pertussis is of the utmost importance. Patients with only a slight bronchitis and absolutely no elevation of temperature do better out of doors except on damp or blustery days. A change of air, to the country or the sea-shore, will often cure the disease, but will also accelerate its progress. As it is a well-known fact that air loaded with carbon dioxide will bring on paroxysms of coughing, we should have fresh air day and night in the room occupied by our patients. We must have fresh air without exposing them to draughts. The temperature of the room should not be below 68 or 70° during the daytime. A room is not comfortable below 68°, and, notwithstanding some opinions to the contrary, it is a fact that many will contract colds and possibly develop bronchopneumonia if the temperature of the room is lower. When pertussis patients have a rather severe bronchitis or rhinitis, or when they have a temperature even a fraction above normal, I do not permit them to leave the house. With a severe bronchitis or with a temperature above normal, under my orders they must remain in bed.

In regard to general treatment, all sorts and kinds of remedies have been tried. Physicians have prescribed nearly every drug in the pharmacopeia. Various drugs have at different times been exploited as specifics, only to be set aside when another remedy appeared. About five years ago an article on the treatment of pertussis, in Anders' "Practice of Medicine,"

attracted my attention. It seemed to me to have merit, so I gave it a trial, and am now using it with some modifications. He advised spraying the nose and throat with equal parts peroxide of hydrogen and glycerin, and giving emulsion of asafetida internally. As you know, asafetida is a slightly stimulating, antispasmodic expectorant and carminative. Unless administered carefully it will upset the stomach. For an infant under five months I prescribe four or five drops every two hours and increase gradually up to eight or ten drops. At four years I begin with fifteen and increase to twenty or thirty drops. If it causes vomiting or diarrhea, the medicine is suspended for a day or two and then resumed with a smaller dose. If there is any nasal discharge in infants I order an ointment containing menthol, boric acid, and white vaseline every two hours. For children over four or five, I use a spray of peroxide and glycerin. In addition to the above I prescribe comparatively small doses of tasteless tannate of quinine. For infants I use it in solution, and for children of five years or over I use the chocolate quinine tablets.

The ointment, the spray, and the quinine I use for their antiseptic effects; the asafetida, for its antispasmodic effect. The asafetida has one objectionable feature, its odor.

When there is a severe bronchitis I use inhalations of compound tincture of benzoin and, in some cases, cresoline, but the latter has a rather pungent odor. When bronchopneumonia develops and the whoop ceases, I stop the asafetida and substitute pneumonia treatment. With this method of treatment I have had what I consider good results. The severity of the whoop always lessens and the period is diminished to two or three weeks.

In closing I wish to say that, due to the form of treatment, vomiting was not a distressing symptom in the majority of cases, consequently I have had very little trouble with the diet.

#### REFERENCES.

- Griffiths on "Diseases of Children" in the Am. Text-book.  
Rotch. Pediatrics.  
Holt. Diseases of Infancy and Childhood.  
Kerley. Treatment of Diseases of Children.  
International Clinics, Vol. i, 17th Series.  
Anders. Practice of Medicine.

## TRANSACTIONS OF THE CHICAGO PEDIATRIC SOCIETY.

*Meeting of December 21, 1909.*

*The President, I. A. ABT, M. D., in the Chair.*

DR. A. C. SOPER presented a case of

### PROGRESSIVE MUSCULAR ATROPHY.

This boy, eleven years old, was admitted to the Chicago Half Orphan Asylum eighteen months ago, physical examination showing nothing abnormal. Less than a year ago there was noted a great difficulty in walking up stairs; this has gradually increased, together with a progressive weakness in practically all his muscles. To-day he cannot rise from a sitting position on the floor without "climbing up his legs," first getting on all fours. He has a waddling gait, and the slightest opposition to the use of his various muscles prevents their use. Some "lordosis" is present, and the infraspinati and calf muscles are slightly hypertrophied and feel hard and rigid to the touch. The electrical reactions are all normal, though weak, and the reflexes are the same. There have been no fibrillary twitchings, and the boy's mentality is apparently normal. He walks to school, a block away from the Orphanage.

It seems probable that the muscles of the shoulder-group were involved before the others, but escaped attention; when lifting him up with one's hands under his shoulders he seems to "slip through" one's hands.

His family history is that his mother's two brothers and a sixteen-year-old brother of the patient died of the same disease. History otherwise negative. No previous diseases.

I would classify this case as one of muscular pseudohypertrophy, of the general class of progressive muscular atrophy.

DR. J. M. DODSON presented a case of

### ARTHRITIS OF INFECTIVE ORIGIN.\*

DR. L. M. BOWES read a paper on

### GASTRIC ULCER IN CHILDHOOD.†

#### DISCUSSION.

DR. H. F. HELMHOLZ.—It is almost impossible to make a diagnosis of duodenal ulcer unless there is vomiting of blood or the passage of blood in the stools. In all the cases I have seen there was neither pain nor tenderness, even those cases that

\* Report to follow in near future.

† See original article, page 534.

were complicated by peritonitis. The children were extremely marantic and had no temperature, no discomfort, and no spasticity of the abdominal muscles. So that it is very difficult in many of these cases to make a diagnosis unless the above-named pathognomonic symptoms are present.

DR. ABT.—Does duodenal ulcer give rise to the same symptoms as pyloric stenosis?

DR. HELMHOLZ.—In one case reported by Freund all the symptoms of pyloric stenosis were present, but at the autopsy there was found not a stenosis of the pylorus, but a large perforating ulcer of the duodenum. The spastic condition of the pylorus was referred to the presence of the ulcer. In a number of my cases the ulcers were immediately behind the pylorus, and did not give rise to any symptoms indicating stenosis, so that I am rather inclined to think that the ulcer was an accidental complication rather than one to which the spastic condition of the pylorus was due.

DR. J. H. HESS.—Dr. Bowes stated that there is a contraindication to the use of the ice-bag because of increased peristalsis, and yet we all use the ice-bag in cases of hemorrhage in typhoid, hoping thereby to allay peristalsis. It seems to me that in such cases I have secured the desired result, although theoretically stimulation should be secured. Ice when taken into the mouth stimulates peristalsis, but I believe that the panniculus adiposus which lies between the ice-bag and the bowel has much to do in allaying the irritation. My experience with it has been very satisfactory.

DR. BOWES (closing).—In the cases in which I used the ice-bag it seemed to me that peristalsis was increased. Of course, that may have been due to the poor condition of the child. In the case I reported the child took a little ice cream and very distressing symptoms followed.

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON PEDIATRICS.

*Meeting of December 9, 1909.*

ELI LONG, M. D., *in the Chair.*

DR. ISIDORE GOLDSTEIN presented cases of

### AMAUROTIC FAMILY IDIOCY.

CASE I.—This patient was a female, aged one year, of Jewish parents. Family history was negative. There was no relationship between the parents. The patient was the first child and was breast-fed. When six months of age the child could sit, and raise itself from the supine to the sitting position without support. Shortly after, the mother noticed that the child was no longer able

to hold the head up, sit, or hold firmly in its hand any object given her. She was constipated; she laughed aloud without any apparent cause and was easily frightened. The tongue always protruded and the child no longer acted as bright as formerly. The hands were closed most of the time. Upon examination the anterior fontanelle was found to be almost closed. The child had a silly, vacant look. There were irregular twitchings of the facial muscles. There was a tendency to keep the eyes turned upward. Pupils were normal. The fundi showed the characteristic grayish-white patch in the macular region, in the center of which was a brownish-red, sharply defined oval spot. There was optic atrophy. The arms were held outstretched and stiff. The tips of the thumb and index finger were usually in contact. The legs were usually extended, spastic but not flexed. The reflexes were exaggerated. There was no Kernig, Babinski, or Oppenheim sign. The Wasserman reaction in both mother and child was negative.

CASE II.—This patient was a female, sixteen months old, of Jewish parents. She was the tenth child and three of them were amaurotic, one of them being a twin. The family history was negative. The child was breast-fed. She was able to support her head at six months. She never sat or stood without support. The child was easily frightened. She did not grasp objects of her own accord. She did not recognize her parents. She had difficulty in swallowing. She was a very fat child, but now was gradually growing thin and weak. The anterior fontanelle was closed. The fundi showed the characteristic spot. The child was stupid, and had a vacant, listless expression. There were chewing movements and difficulty in swallowing. The spine showed a kyphosis and a right lateral lordosis. The upper extremities were spastic. The tips of the thumb and index fingers were in contact. The lower extremities were spastic. The reflexes were exaggerated. There was no Kernig or Babinski sign. The Wasserman reaction was negative in both mother and child.

CASE III.—This patient was fourteen months old, the second child of Jewish parents. The family history was negative, except for a history of consanguinity in mother and father. The child was breast-fed. The duration of illness was ten months. The child could not sit, was hardly able to support the head, did not stand or walk. The eyes followed the light. The child cried a great deal, and laughed frequently without apparent cause. It was constipated, was weak and was growing very thin. It had always been fat. The head was large and square. The anterior fontanelle was open and pulsating. The fundi showed the characteristic spot and optic atrophy was present. The saliva dribbled, there was a smacking of the lips and chewing movements. There was marked pronation of forearm; tips of the thumb and index finger were in contact. The reflexes were exaggerated.

## CONGENITAL MUSCULAR DYSTROPHY.

DR. KAUFMAN SCHLIVEK presented a female, aged two years and three months. The family history was negative. The present history dated from birth. The child had never been able to flex the elbows or the knees, and the feet had always been turned in. The child did not move the arms until she was six months old; then she began to raise them slightly. She moved the legs from birth. During the past few months she could stand with support. She was bright and well nourished. There were no signs of rickets. Upon examination the upper extremities were held in a position of Erb's paralysis, complete extension at the elbows and rotated inward. The anterior part of the arm was flat, soft, and flabby. The posterior part was better developed. The anterior surface of the humerus was readily felt. The shoulders were fairly well developed. The forearms were well developed. The child could raise the right arm to almost 90 degrees and the left a little higher. Active and passive motion (flexion) of the right elbow was limited to 30 degrees; the left elbow to 60 degrees. Pronation and supination of the forearms were good. Motion in the fingers, wrists, and hands was normal. The muscles of the thighs and legs were soft and flabby. Passive motion at the hips was not limited. Flexion at the knees was limited to 45 degrees. There was a marked lateral motion in the knees, especially inward. Lateral motion of the right knee was greater. There was no marked creaking in the knees. The feet were in the position of talipes equinus varus. The back muscles were well developed. The entire skeleton had been x-rayed and the only condition worthy of note was that the articular surfaces of the elbows and knees were in closer proximity than normal. The bones of the ankle were undeveloped. The mental condition of the child was excellent.

To determine the diagnosis of this case one had to consider the bony, nervous, and muscular systems. The bony system could be eliminated, for the skiagram showed no obstruction to motion. The nervous system could be eliminated as well, for no lesion of it could give such a peculiar distribution of the symptoms. There were no trophic disturbances, the sensations were normal and there was no reaction of degeneration. The only conditions referable to the muscles were Oppenheim's disease, Thomsen's disease, and congenital muscular dystrophy. In the first there was a general flaccidity of the skeletal muscles excepting those supplied by the cranial nerves. It varied in degree; in extreme cases the limbs were mere useless appendages, really but flail joints. The muscles were soft and atonic, reacted feebly or not at all to electricity. In the second there was stiffness accompanying the beginning of every muscular movement, which passed off on continuance of the act and again accompanied the termination of the movement. The myotonic reaction to electricity was present. The

only other condition to be considered was muscular dystrophy; and from the symptoms described, the case corresponded to the latter diagnosis.

#### DISCUSSION.

DR. HENRY W. FRAUENTHAL said that the case presented by Dr. Schlivek, which had been under his observation at the Hospital for Deformities and Joint Diseases, where he had corrected the club-feet, was possibly a case of muscular dystrophy, as it corresponded with the literature on the subject. The doctor thought that there was an absence of cartilage which caused the limited motion, and Dr. Frauenthal had massage given and passive movements, with the approval of Dr. Schlivek, and the range of motion during the past few weeks had materially increased. Dr. Frauenthal had presented a similar case before the Orthopedic Section; this child was seven months old and several joints were involved.

DR. ALFRED F. HESS did not think the diagnosis in the case presented by Dr. Schlivek was at all clear. The muscles appeared to be in good condition. The x-ray plate showed the articular surfaces of the bones close together. The pathological condition was a partial or complete absence of the interarticular cartilage; sometimes there was an exostosis of the bones. The condition was really a well-defined one, and was not always hereditary. It was a separate disease, and he did not think they should class it with the dystrophies.

DR. KAUFMAN SCHLIVEK said that the only way to make an absolutely positive diagnosis of the case he presented was to take a section of the muscle which, of course, was prohibitive. There was no limitation of passive motion at the shoulder; this joint was normal and still the child could not raise the arm above 90 degrees. From this demonstration they must infer that there was muscular weakness. Last spring the patient was shown at Dr. A. Jacobi's home, and a tentative diagnosis was made of congenital muscular dystrophy. Dr. George W. Jacoby confirmed this diagnosis.

#### CEREBRAL HEMORRHAGE.

DR. HENRY W. FRAUENTHAL presented a boy who had had an attack of anterior poliomyelitis in August, 1907; his extremities and face were involved. At the present time his right arm and right leg were still involved, as well as the left side of his face. He presented this case to compare it with a child similarly affected, and whose father died of cerebral hemorrhage at the age of twenty-six. The child was eighteen months old, and had a paralysis involving the right side of the face, left arm and leg, but his paralysis was due to a cerebral hemorrhage, resulting most likely from syphilis, as the child still had a congenital eruption with demarcations on the palms of the hands, soles of the feet, and also on both legs.

Dr. Frauenthal showed photographs of twenty cases of facial involvement, associated with extremity involvement; these cases were seen during the epidemic of infantile paralysis in 1907. He said he had seen nearly forty such cases, but had not had them all photographed, as the paralysis could not be well brought out, in some of the cases, on a picture.

"PROTECTIVE" ACTION OF THE COLLOIDS IN MILK WITH SOME  
ULTRAMICROSCOPIC OBSERVATIONS.

JEROME ALEXANDER, M. Sc., and DR. JESSE G. M. BULLOWA presented this paper. If one examined the suspension of any fine powder in the ordinary microscope, the individual particles exhibited a slight trembling motion known as the "Brownian movement." Although this movement was more marked in the case of the smaller particles, it was not sufficient to keep them afloat and they gradually sank out of solution. With the ultramicroscope it had been demonstrated that with increasing fineness of subdivision the motion of the subdivided particles continued to increase in speed and amplitude until it became so vigorous and extensive that the particles no longer settled but remained permanently afloat; that is, they had a colloidal solution. If the subdivision proceeded still further they gradually passed into the sphere of true or crystalloidal solutions, wherein the particles of the dissolved substances were reduced to molecular dimension or even split up into ions. The colloidal condition, therefore, was consequent upon an extremely fine state of subdivision, and practically any substance could be converted into or produced in this condition. Some colloids, such as gelatine and gum arabic, were quite sensitive to electrolytes, and readily redissolved after desiccation; others, such as pure colloidal metals, were readily coagulated by electrolytes and did not redissolve after desiccation. Zsigmondy had expressed this difference by calling the former reversible and the latter irreversible colloids. The presentation of a diagram taken from Zsigmondy's book served to elucidate this statement. A most interesting property of reversible colloids was that they could protect irreversible colloids from coagulation and permitted them to redissolve after desiccation. As little as 1/10,000 of 1 per cent. of gelatine produced this effect in a solution of colloidal gold. Such action was known as "protection" and a reversible colloid exhibiting it was known as a "protective colloid." This power of protection was specific, and a reversible colloid might protect one substance and not another.

Milk was then considered in the light of the principles of colloid chemistry. Many analyses of milk had included the casein and albumen under the omnibus title of "proteids" thereby obscuring a most important and vital fact—the ration of casein to albumen. The importance of this fact at once became evident when it was stated that casein was an irreversible coagulating colloid, whereas albumen was a reversible or protective col-

loid. Mother's milk was scarcely coagulated by acid or rennin, and by increasing the amount of protection in cows' milk it might be made to act in like manner, which was easily proven by adding a small quantity of gelatine, gum arabic, or other protective colloid. Cow's milk thus treated was not as well or readily curdled by acid or rennin. Besides studying the macroscopic effect of protection on the casein they made certain observations with the ultramicroscope which they reported. These observations seemed to show the importance of the subdivided condition of the casein of milk. The influence of "protection" was not, however, confined to the casein, but probably was important in maintaining the emulsion of the fat. The following conclusions were presented:

1. The casein of milk is an irreversible, or coagulating, or unstable colloid, which is protected by lactalbumen, a reversible, or stable colloid.

2. In the modification of cows' milk for infant-feeding, it is necessary not only to consider the per cent. of "total proteids," fat, etc., present, but to see that the casein is adequately protected. Lest they be misunderstood to be only restating the principle expressed in the doctrine of "split proteids" they emphasized that the casein existed in cows' milk in an already formed higher degree of colloidal aggregation.

3. Bald chemical analysis, without taking into consideration the principle of colloidal protectives, is an insufficient criterion for the actual digestibility or availability of food.

#### THE TREATMENT OF INTESTINAL INDIGESTION IN CHILDREN ON THE EXAMINATION OF THE STOOLS AND CALORIC VALUES.

DR. JOHN LOVETT MORSE, of Boston, and DR. FRITZ B. TALBOT, of Boston, presented this communication. It was apparently taken for granted that the metabolism of children was essentially the same as that of adults. It was generally believed that young children required a relatively large proportion of carbohydrates in their food and that they needed proportionately more proteids than adults. None of these points, however, had been scientifically proved. It seemed to the writers that if the stools of children suffering from disturbances of digestion, especially of the intestinal type, were examined in order to determine what constituents of the food were not being utilized and the diet regulated on the basis of these findings, due regard being paid to caloric needs, much better results could be obtained than by the usual empirical methods. Their experience led them to believe that comparatively simple tests were sufficient to give results accurate enough to form the basis for satisfactory treatment. They had also found that it was a very simple matter to calculate the caloric value of the food and to regulate the proportions of fat, carbohydrates, and proteids. They also found that it was easier to control the diet of a child than that of an

adult and that it was at least as easy to get the cooperation of the child in carrying out the diet as it was to get that of an adult.

With regard to the caloric needs of children, it was probably not far from the truth to say that the average child of four years needed about 1,200 calories, or 70 calories per kilo in twenty-four hours; the average child of eight years, 1,400 calories, or 60 calories per kilo in twenty-four hours; and the average child of twelve years, 1,600 calories, or 50 calories per kilo in twenty-four hours. There was no objection to giving large amounts of proteids in order to meet the caloric needs when there were disturbances in the digestion of fats or carbohydrates. On general principles, however, it was wiser to keep the proteids down somewhere near the average need, because the metabolism of the proteids required more energy and the products of proteid metabolism were more difficult of elimination than were those of the fats and carbohydrates. An excess of proteids, therefore, required an unnecessary expenditure of energy and was consequently not economical. In disturbances of digestion fat might be substituted for carbohydrates and carbohydrates for fat with great advantage, provided the total caloric value of the food was kept up. The fats might be entirely replaced by carbohydrates over considerable periods of time without doing any harm. There was a certain amount of risk in replacing the carbohydrates entirely by fats because of the dangers of developing acid intoxication. A table giving the caloric value and composition of the various foods commonly given to children suffering from disturbances of digestion was presented. With it they found it an easy matter to plan out a diet for a child to give not only the proper number of calories but also the desired relations between the different food elements.

A child's stool was normally homogeneous; lumpy and mushy stools were pathological. The reaction was weakly alkaline, amphoteric, or neutral. A very strong alkaline reaction suggested protein putrefaction. A strong acid reaction suggested disturbances in the digestion of fat. The microscopic examination showed a few remains of a vegetable nature, single yellow masses, a few muscle fibers, a few crystals, rare starch granules, and microbes. When acetic acid was added, a few drops of fatty acid were seen in each field after heating.

The stools that deserved special mention were the fatty, the stools of carbohydrate indigestion, and the catarrhal stools. The fatty stools were gray or white in color, dry or of clay-like or creamy consistency, acid in reaction, and of a rancid odor. The carbohydrate stools were brown or golden-yellow in color, salve-like in consistency, acid in reaction, acid or sour in odor. The catarrhal stools showed an excess of mucus. It was often associated with protein putrefaction and a foul odor. The character and the quantity of the food taken in the twenty-four hours was known in every instance, so that for all practical purposes the children had had a test diet. The methods of

examination employed are essentially those described by Schmidt in his work. The form, coherency, consistency, color, and odor, and the presence or absence of extraneous matters were noted in the macroscopical examination. The microscopical examination was made with a low-power objective and later with a No. 7 objective. Three slides were examined; the first contained very thin crushed out feces which was examined in the fresh condition. Another was stained with Lugol's solution and examined under the cover for starch. The third was stained with a saturated alcoholic solution of Sudan III. In the first specimen an excess of undigested muscle fiber, connective tissue or vegetable fiber could be studied, and pathological elements differentiated. A preliminary estimation of the amount of neutral fat, fatty acids, soaps, and starches could also be made. Under the cover-glass the starch granules would stain blue or violet and certain microbes would stain blue. There were practically no unchanged starch granules in a normal stool. An excess was always pathological. Under the third cover-glass neutral fat drops and fatty crystals stained red. Any increase in the amount of fat after the addition of acetic acid indicated the presence of a corresponding amount of soaps. The recitation of illustrated cases closed the paper.

#### DISCUSSION.

DR. THOMAS S. SOUTHWORTH said that it seemed to him as though something had been now produced which all desired, namely, a means of securing an interpretation of the stools which could be taught and placed in the text-books and read and understood by all; heretofore the students had to be taught to make their interpretation of stools by actual exhibition of the different forms of abnormality. What had been presented was perhaps what they had needed most in order to advance successful infant-feeding. Unless they could know what results they were going to obtain from the feeding by the proper interpretation of the condition of the stools, they could have no criterion upon which to base any intelligent changes in the feeding. The microscopical examination of the stools seemed to confirm what they shrewdly suspected from simple inspection of the stools. Setter's work, published four years ago, taught them to interpret stools according to their odor, reaction, and other evidences of fermentation with some microscopical test showing faults in the stools and faults in the types of the individual elements in the food. What had been presented went much further in that it clinched the matter. By means of such an examination one might be able to anticipate difficulties, since the microscope might show that there was a nonassimilation of the food even before the symptoms came strongly to the front. In listening to the reports of the cases by Dr. Morse one was more and more convinced that the successful feeding of the child or infant meant a rationally mixed food of proper proportions. If an

examination microscopically of the stools was made, one might more often make such changes in the diet as would result in benefit to the infant. The confirmatory knowledge which one got from an examination of the stools should result in greater success in the future feeding of children.

DR. JOHN HOWLAND said that Dr. Morse had done them a real service in insisting upon an estimation of the caloric values of foods. That was the only satisfactory and accurate way to know the exact amount of food the child was taking. The impression seemed to prevail among some that these caloric methods told exactly what kind of food the child should take. This was not so. It simply told what amount of food was suitable for a child in order to satisfy his caloric requirements. It frequently happened that a child could not digest food in sufficient quantities to satisfy his caloric needs; in such cases the physician with his eyes wide open to the deficiency had to wait until the child's digestion improved. What was found more frequently, however, was that the caloric requirements of the child were exceeded. It very frequently happened that a diminution in the quantity of food was followed by very prompt relief of symptoms and a gain in the child's weight. Almost all the exact chemical studies in metabolism that had been made in children had been made in infants; this of course was accounted for by the ease with which they could obtain the twenty-four hour specimen of feces and urine. Data upon the metabolism of children after the first year were very few and incomplete, and exact data were very greatly needed. For this reason Dr. Howland regretted that Dr. Talbot had not confirmed in older children the admirable investigations he had made upon infants.

DR. ELIAS H. BARTLEY asked if they really could determine the condition of the digestion of fats by this microscopical examination of the stools. If by this microscopical examination of the stools they could determine what was going on in fat digestion, that would give them a determination not before clearly brought out. They all admitted that fat indigestion was certainly a very common thing in intestinal disturbances occurring in early childhood as well as in infancy. Dr. Bartley had noticed what to him was a very peculiar thing, and he did not know whether there was any clear explanation for it. In some of the cases he had had to deal with where there was evident fat indigestion, he had been obliged to reduce the fat in the milk down to between 1 and 2 per cent. in order to give the children any sort of comfort; in such cases he had found that some cases would tolerate butter if given with cereal, or given with bread or zwieback, but, on the other hand, they would not tolerate the same amount of fat if given in the milk. He did not know whether others had noted this same thing or not. The only interpretation he could give of this was that it was the cereal that broke up the butter and made something like an emulsion in the stomach. He

had one child under his care at present where he was obliged to keep the fat in the milk down to about 2 per cent. If more than that was given, it was evidenced by the putty character of the stools, an excess of mucous excoriation of the nates, etc.

The statement had been made that it was an excess in the quantity of food that was the foundation of the digestive troubles rather than its quality. In general, all believed that when they gave a fairly well balanced food, the question of quantity was very important. And here was where the heat value of the food came in. He said that he had adopted in his feeding, as a minimum for children under one year of age, one gram of protein for every pound of body-weight per day. That meant the giving of about one ounce of milk for every pound of body-weight per day. One could not always determine the particular amount of protein actually absorbed by any particular baby. To get the requirements of protein he thought they would be furnished by giving one and a half ounces of milk per pound weight of body per day. In practice this worked fairly well. But some children would not obey the rule as to caloric values when it came to fats. All these calculations for determining the caloric value of the food of infants must be modified to suit the baby under trial.

DR. FRITZ B. TALBOT, of Boston, said that in cases of starvation some fat was excreted and was found in the stools. Under normal conditions the amount of fat excreted in the stools did not increase when food containing fat was given. On this basis he believed that the amount of fat seen under the microscope gave an estimate of the amount of fat in the stool. Normally, about 20 per cent. of the dry stool was composed of fat. There was no difficulty in recognizing an absolutely normal or markedly pathological stool. He had made a rule based on experience with the stools of older children, that when, with a No. 7 objective, he found six, seven, or eight droplets in each field and when, after the addition of glacial acetic acid and heat, nearly the whole preparation showed fat, he called that an excess. But there was to be taken into account the individual equation in this as in other microscopical examinations. With regard to Dr. Bartley's two cases which he reported, Herter and Kendall had shown in their bacteriological work on stools that an excess of one component would change the bacteriological flora; therefore, it was fair to assume that the predominance of certain types of bacterial flora might cause indigestion. It was well known that overfeeding of protein would cause fat indigestion, and he believed that overfeeding of fat could cause sugar indigestion. In Dr. Bartley's second case, the increase in the fat in the milk formula might have caused sugar indigestion, and the products of sugar decomposition caused the burning and irritated buttocks. Experience had shown that the microscopical examination of the stools was a very valuable aid in diagnosis and treatment, and he had found

that it was valuable in its negative as with its positive results. When he saw a youngster with some obscure dyspeptic upset and examined the stools and found nothing abnormal, he felt that it was safe to say that simple methods of treatment would cure the indigestion.

DR. WILLIAM P. NORTHRUP expressed his appreciation of the work done by Dr. Morse and Dr. Talbot. Many years ago when exact percentage methods for feeding infants were being investigated one heard frequent remarks about the child's stomach not being a test-tube, and that percentage feeding might and might not meet the needs of the child. However, practitioners had profited by these methods. A cook might prepare an excellent dinner by adding a pinch of this ingredient, a dash of that, and a cup of another, it might have been the result of years of thought and she might not be able to tell the next day what she had placed in it. Many cooks provide excellent dinners without their receipt books and exact methods. Valuable after all were fixed data and exactness for the many dinners, the many cooks, and the improvement of methods.

What had been presented to them was another exact method of feeding infants and children by determining their needs. It seemed to Dr. Northrup to be a very valuable contribution. If one sees an indication of an excess of any one ingredient, it certainly furnished a control. It furnished a point of departure which was destined to be very useful in the future.

DR. L. E. LA FETRA wished to add a word of appreciation for the paper presented by Dr. Morse and Dr. Talbot. Some points already emphasized might be still further dwelt upon, especially that a microscopical study of the stools would help to avoid certain errors which without it were not easy to discover. He agreed with Dr. Morse that the stools in carbohydrate indigestion frequently look like normal stools, being often brown and smooth. It was also quite common to discover that in feeding children that were losing weight the caloric value of the food was too high.

It had frequently been stated that the caloric method was a method of feeding. It was not a method of feeding. It was a method which merely told them whether they were giving too little food to the infant. It therefore served as a measure for any method of feeding.

DR. JOHN LOVETT MORSE, of Boston, said there were a few things from the clinical side that he would like to refer to in closing the discussion. He agreed entirely with Dr. Kerley that the prolonged use of milk was often the starting-point of indigestion in infants, but he said he could hardly agree with him when he stated that milk was not well borne by older children with indigestion. In proper amounts milk usually did agree with them, although at times it was necessary to substitute skimmed milk for whole milk. In the vast majority of the cases of indigestion in children, this condition could be easily straight-

ened out by common-sense methods of feeding, and such very careful treatment was not required. While this was true, he personally felt safer if he knew just what to do and tried to do it. He found that, as a rule, he knew what the condition was from the macroscopical examination of the stools; but now and then Dr. Talbot surprised him very much by the results of his microscopical examination of the stools and prevented him from falling into serious error.

What Dr. Schwarz had said in regard to the importance of rest Dr. Morse agreed with. Rest was an important adjunct not only in intestinal, but also in children who were run down from any cause.

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## REVIEW.

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DISEASES OF CHILDREN. BY HENRY ENOS TULEY, M. D., Professor of Obstetrics, University of Louisville, Medical Department; Ex-Secretary and Ex-Chairman of the Section on Diseases of Children, American Medical Association; Secretary Mississippi Valley Medical Association, etc., Louisville, Ky. Octavo volume of 653 pages. Printed with clear type on heavy calendered paper. Illustrated. Cloth, \$5.00; Half Morocco, \$6.00. Southern Medical Publishing Co. No. 2427-29 York Road, Baltimore, Md.

Dr. Tuley adds another to the constantly growing list of books on this subject. In his own words, he states that he seeks to reach the practitioner and student rather than the specialist. In this aim he succeeds, since his work lies midway between a compendium and a treatise. The various subjects are handled directly and briefly, while the suggestions for treatment appear chiefly limited to those measures which the author has found effective in his daily practice. Space is given more freely to the important subject of Infant Feeding and attention is duly paid to the necessary measures for obtaining a pure milk supply. This latter is natural since the author has been identified with the movement for clean and safe milk in his State. While the percentage system of feeding is employed and recommended, only the bare fundamental facts are introduced into the main text, while all complicated and divergent mathematical formulæ for producing milk modifications are wisely relegated to the appendix where they do not confuse the student and interrupt the continuity of the text. Newer subjects, like the serum treatment of cerebrospinal meningitis and diseases such as pellagra and uncinariasis which have recently attracted attention are briefly but competently outlined. While the volume is unduly bulky and the medical proof-reading of the prescriptions should receive attention in future editions, the volume itself should be well received, and especially in the region from which it emanates, for, if we mistake not, this is the first book on the subject written and published in the South.

## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Serum Therapy of Epidemic Cerebrospinal Meningitis.**—Simon Flexner (*Jour. Amer. Med. Assn.*, October 30, 1909) is still extremely conservative in his estimate of the value of his anti-meningitis serum. He calls attention to the fact that in most of the countries in which it has been employed with such apparently favorable results the epidemic was at its height or already on the wane; but, fortunately, in France it was just beginning. Reports covering 100 or more cases in that country show a mortality which will probably be less than 25 per cent. while a smaller number treated by other methods have given a mortality approaching 80 per cent. The writer presents a tabulation of 712 cases in which the bacteriologic diagnosis was made and the serum treatment used. It shows that the highest mortality occurred in the first two years of life. But, contrary to the rule under the older forms of treatment in which the mortality was 90 per cent. or over, in this series it was 42.3 per cent. The second age period is from two to five years, in which the mortality was 26.7 per cent. The third age period embraces children from five to ten years of age and gave the lowest mortality of all, namely, 15.9 per cent. The next period extends from ten to fifteen years and gave a mortality of 27.7 per cent. The next period of from fifteen to twenty years showed a considerable rise in mortality, equaling 32.7 per cent., and the last period, embracing the cases of twenty years and over, gave a mortality of 39.4 per cent. The average mortality in all the age periods was 31.4 per cent. The importance of early injection of the serum is shown by another table. The rule of the effects of early injection is preserved in the age periods up to the period of from fifteen to twenty years, when it disappears. The discrepancy occurring in the two highest age periods cannot be wholly accounted for at present. The percentage mortality in the first-to-third-day period was 25.3; in the fourth-to-seventh-day period, 27.8; and the period later than the seventh day, 42.1.

G. Muls (*La Clinique*, October 2, 1909) says that serotherapy has reduced the mortality from 45 to 15 per cent. when the treatment is applied early in the disease. He has found the sera of Dopter and especially that of Flexner to be the most active. They are injected directly into the spinal canal, in quantity somewhat under the amount withdrawn. The advantage of this procedure is that more poison is withdrawn, there is lessened pressure, and the serum is less diluted. The patient is placed with his head somewhat lower than his pelvis to allow

of better diffusion of the serum. The injection should be repeated daily for three or four days, even when the patient improves, in order to avoid recurrence. The guide to improvement should be the fall of temperature. A cure is effected in about six days under this treatment. Antidiphtheritic serum in this disease can only be condemned.

**Transmission of Acute Anterior Poliomyelitis to Monkeys.—**

An advance in the study of this disease has been made by the experiments of Simon Flexner and P. A. Lewis (*Jour. Amer. Med. Assn.*, November 13, December 4, 1909). Working with emulsions in salt solution of the spinal cord of fatal cases in children and subsequently of the monkeys injected with this, they have shown that the virus of epidemic poliomyelitis is readily transmissible from man to monkeys and from monkey to monkey, by way of the brain, the peritoneal cavity, the sciatic nerve, the subcutaneous tissue, and the circulation, and that, however transmitted successfully, it becomes established in the spinal cord and medulla, where it sets up characteristic lesions which are followed by equally characteristic effects that exhibit themselves as the usual symptoms of infantile paralysis in human beings. This experimental form of poliomyelitis in monkeys is a severe and very often a fatal disease, and when recovery from the disease takes place there persist residues of paralysis which resemble the paralytic effects also persisting in human subjects of poliomyelitis. They have shown also (*Jour. Amer. Med. Assn.*, December 18, 1909) by suspension in glycerin of the comminuted cords of monkeys affected with poliomyelitis, and by filtration through a Berkefeld filter before injection into other monkeys, that probably the infecting agent of epidemic poliomyelitis belongs to the class of the minute and filterable viruses that have not thus far been demonstrated with certainty under the microscope. The fact has been determined that the virus of poliomyelitis can be transferred to the central nervous system by way of the subcutaneous tissues in monkeys.

To determine whether an attack of epidemic poliomyelitis followed by recovery will afford immunity to reinfection, the writers (*Jour. Amer. Med. Assn.*, January 1, 1910) have reinoculated several of the recovered monkeys and have noted in some instances failure of the virus to act while causing paralysis in the control monkeys. An attempt to modify the course of an intracerebral inoculation by the simultaneous injection beneath the skin of a virus altered by heating was a failure.

**Treatment of the Onset of Acute Anterior Poliomyelitis.—**

Feeling that an effort should be made to control this disease before the appearance of paralysis, Le Grand Kerr (*L. I. Med. Jour.*, Nov., 1909) thinks that during the course of an epidemic all cases of indefinite illness in children under five years of age, especially if fever, diarrhea, cough, and vomiting are present, should be treated as positive cases of this affection. He has employed tentatively for this purpose a hot pack, administration

of water freely by mouth even if vomiting is increased thereby, a hot enema followed by a large dose of castor oil, and rest in a quiet and darkened room, restriction of diet, and the use of belladonna and ergot in full doses.

**Intensive Serotherapy in the Treatment of Severe Angina and Diphtheritic Paralysis.**—H. Méry, B. Weill-Hallé, and Parturier (*Arch. de méd. des enfants*, Sept., 1909) describe their technic in the use of antitoxin in large and repeated doses to prevent and to cure diphtheritic paralysis and in the treatment of very severe sore throats of diphtheritic origin. They increased the size of the doses used during, the acute stage of the disease, and continued them after the false membrane had fallen from the throat. After beginning this treatment they lost no case of malignant angina, nor did any die of paralytic syncope. No albuminuria was caused by these large doses. Anaphylactic symptoms result rather from small than large doses of serum. The use of serum systematically in convalescence from these throats will result in an absolutely preventive action.

**Contagion and Semiology of Scarletina.**—A. Lesage (*Gaz. des Hôp.*, Oct. 16, 1909) questions the necessity of quarantine for scarlatina in the desquamative stage. He contends that there are many arguments to show that the contagion is only from the throat, and that the eruption is similar to the serum rashes, an adventitious occurrence not always present, the result of toxemia, and not a necessary part of the disease. He gives many illustrations to show that children have been in contact with scarlatina patients during desquamation and have not been infected, while, on the other hand, cases in which there was angina without eruption have communicated malignant scarlatina. The early contagion is conveyed by the mucus from the mouth. The author claims that when scarlatina is taken while the communicating case is in a late stage of the disease this is due to the germs remaining a long time in the mouth and throat. This mucus may become dried and be carried about with virulent germs in it. It may also be maintained in cases of scarlatinal otitis. Stickler inoculated ten children with the mucus from the throat of a patient in the eruptive stage of the disease, and all of them took the disease, it appearing within two days from the inoculation. By inoculation of scales the same result has not been obtained. The scarlatinal tongue is characteristic long before it is a strawberry tongue. Isolation of school children should begin with those who show this tongue. To base the diagnosis upon a symptom-like eruption, which is inconstant, is an error. It should be based on the cycle of the throat and tongue alone. About the fifteenth day the tongue returns to normal; the evolutive cycle has ended. When the tongue and throat show the characteristic color and membrane for a longer time the disease remains contagious, being still a culture medium. Isolation should last only during this cycle.

**Epidemic of Varicella.**—Bruno Bosse (*Arch. f. Kinderheil.*, vol. li, parts i-iv) states that although in general chickenpox is a disease that is not accompanied with serious symptoms, when it occurs among very young infants the results may be serious and even fatal by reason of a mixed infection of the secretion in the bullæ with streptococci or staphylococci. He gives the histories of eight septic cases, with four deaths, out of thirty-seven cases occurring in a maternity hospital, all being nursing infants or bottle babies. He shows that we can never be sure of the prognosis of this disease in young infants, it depending on the virulence of the infection, the resistance of the organism, and the duration of the suppurative process.

**Spasmodic Paralysis due to Hereditary Syphilis in the Child.**—A. B. Marfan (*Presse méd.*, Oct. 9, 1909) describes a case of hereditary syphilis in which the manifestations began some years after the birth of the child and ended in a spastic paraplegia of the lower extremities. The author has seen several similar cases, and considers this a picture which is characteristic of this affection alone. It consists of paraplegia, with spasm of the muscles of the lower extremities. The spasm is absent when the child is quiet, but the reflexes are much exaggerated. There are no sensory symptoms, and no trouble with the bladder or rectum. Argyll-Robertson pupils are present, combined with some lessening of the intelligence. When the patient walks the toes are dragged because of the spasm of the muscles, which prevents the action of the knee- and ankle-joints. The thighs approach one another and the knees touch. There is ankle clonus. Electrical examination of the muscles shows exaggeration of the faradic contraction with the normal galvanic reaction. A spastic paralysis is always the result of an affection of the spine or brain. This is not of cerebral origin because a spastic cerebral paraplegia occurs only in Little's disease which begins at birth, while this form begins some years after birth. Little's paralysis results from meningo-cerebral hemorrhage resulting from a severe labor. This lesion results from a chronic myelitis of slow and progressive evolution. The patient in question developed a parenchymatous keratitis. This type of lesion is unique both clinically and anatomically, and results from hereditary syphilis. In this disease there is a primary affection of the blood-vessels and the connective tissue, and a secondary affection of the nervous elements. This disease exists in patches, and acts especially on the pyramidal tract. It begins late, from the fourth to the seventh year, insidiously, progressing slowly and involving especially the legs, and is accompanied by mental degeneration. Examination of the eyes for Argyll-Robertson pupil is important. The author had hoped to get good results from the employment of antisymphilitic treatment, but was disappointed, a long course of treatment having in no way improved the condition of the patient.

**Voluminous Polypoid Tumor of the Ureter in a Girl of Three Years.**—E. Petit de la Villeon (*Gaz. hebdomadaire des sciences médicales*, Oct. 10, 1909) gives an account of the occurrence of a large polypoid tumor connected with the urethra, in a child of three years, which from its rapid growth was supposed to be a sarcoma. The child had a profuse muco-purulent discharge and itching before the tumor appeared externally. The tumor was large, wet, red, and turgescient. After removal it was found to be a simple polypus. Such tumors are found only in women during the child-bearing period as a rule. It grew from the wall of the urethra. There was no apparent history that had an etiological bearing on the occurrence of the tumor.

**Umbilical Hernia in the Child.**—Kirmesson (*Journal de médecine de Paris*, October 30, 1909) states that congenital umbilical hernia is rare, it being generally acquired and often combined with other forms of hernia due to weakness of the umbilicus and inguinal canal. The hernia occurs generally to the right and upper side of umbilicus. The frequency of hernia lessens as the child increases in age, a spontaneous cure resulting frequently. No form of treatment is practical except the use of a properly fitted bandage. In many cases a cure is obtained by wearing such a bandage. When the bandage has not brought about a cure by the age of four or five years operation is recommended.

**Intestinal Perforation During Typhoid Fever in Children.**—J. H. Jopson and J. C. Gittings (*American Journal of Medical Science*, Nov., 1909) find that the percentage of perforation in typhoid fever at all ages is given by different writers at from 1.5 to 3.66. They have collected 4,947 cases with a percentage of perforation of 2.19. In seeking cases of perforation in children for study they have fixed the age limit at fifteen years, have analyzed only cases in which operation was performed and perforation distinctly due to typhoid was proved. Of such cases they have found forty-five reported since Elsberg's paper in 1903, the exact age being given in forty-four. Of twenty-one of these under ten years of age, twelve recovered and nine died, a mortality of 43 per cent.; of twenty-three, ten years of age or over, ten recovered and thirteen died, a mortality of 56.5 per cent. That children as a rule suffer from a milder type of the disease than adults is generally admitted, and it is probably this, in part, that explains their lower mortality after perforation. Typhoid perforation is very rare under five years of age; after this period it is not infrequent, being about half as common as in adults. The favorite time of perforation is at the end of the second and during the third week. The diagnostic symptoms, in the order of their importance, are pain, tenderness, rigidity, fall in temperature, rise in pulse rate, collapse, vomiting, chill, and rising leukocytosis. The mortality after operation is influenced by the severity of the disease rather than by the protracted course. It is lower under ten years of age than after this time. The mortality is lower in relapsed than in unrelapsed

cases. The average mortality is somewhat less than 50 per cent. and at least 25 per cent. better than in adults. The earlier the operation is performed the better the prognosis. The technic of the operation does not differ materially from the advisable in adults, except in the use of a general anesthetic and the even greater necessity for rapidity in operation and avoidance of meddlesome surgery.

**Hypertrophic Stenosis of the Pylorus.**—Stanley Stillman (*Jour. Amer. Med. Assn.*, November 6, 1909) discusses twenty-seven reported cases of this condition, four of which he considers doubtful. He believes that cases of pure pyloric spasm can, and ought to be, in most cases, differentiated from all but the most mild cases of hypertrophic stenosis, and that they should probably never be treated surgically. He thinks that medical treatment should be given while there is a reasonable doubt as to the diagnosis, in cases of hypertrophic stenosis plus spasm, in which no tumor can be demonstrated, but thereafter medical treatment should not be persisted in if the infant is losing ground; that control of vomiting in these cases does not mean cure, and that gastroenterostomy does mean cure in at least nine out of ten cases, and that it is not so much a question of necessary operation as of unnecessary suffering, danger, and death.

**Gastric Capacity of Infants.**—H. O. Mosenthal (*Arch. Ped.*, October, 1909) has investigated this subject by tabulating the amount of milk ingested at each nursing by twenty-four marasmic babies and the postmortem capacity of their stomachs which was less than that of normal infants of the same age. From these observations he concludes that the gastric capacity of infants as measured postmortem or intravivam is a false guide to the amount of milk that should be offered at each feeding. The quantity of milk given at each nursing should exceed the measured gastric capacity for a child of the corresponding age by a considerable margin. The interval between nursings should never be less than two and one-half hours for breast-fed children, and three hours for bottle-fed. Infants fed according to these principles showed no signs of gastric dilatation during life nor on postmortem examination of twenty-four cases that died of marasmus. It has been shown that when milk is given in variously colored portions each subsequent feeding layers itself about the earlier ones, and thus the food first ingested may be kept in the stomach indefinitely if meals are given at too frequent intervals. In infants exhibiting the symptoms of overfeeding the size of each nursing is in many instances not at fault. The cause of such symptoms must also be sought in too short periods between nursings, in the improper dilution of milk, and especially in excessive fats.

**"Casein Masses" in Infants' Stools.**—L. F. Meyer and J. S. Leopold (*Arch. Ped.*, October, 1909) hold that the so-called "casein masses" cannot be considered undigested casein. Their analyses show that the nitrogen of the feces and that of the food

bear no intimate relation to one another. The appearance of "casein masses" and even an increased amount of nitrogen in the stools do not point to a disturbance in proteid digestion. By giving or withdrawing large amounts of sugar from the food without altering the proteids, they were able to cause the appearance and disappearance respectively of the so-called "casein masses."

**Has the Fat of Foods an Influence on the Mother's Milk?**—Armando Malagodi (*Riv. di Clin. Ped.*, October, 1909) finds that there is a great variation of opinion as a result of experiments on the effect that increased feeding with fats has on the milk of nursing women, some thinking that it increases the quantity, some the quality of the milk, and others denying that it has any effect whatever. The author made analyses of milk in the Obstetric Clinic of Bologna, from which he gives the following conclusions: in one case increase of fat in the milk was found after increase in the fat content of the food; in all cases reducing the fats in the food caused diminished amount in the milk. The quantity of fat in human milk, being in relation with the absorption of fats by the intestinal villi, depends on the power of the mammary glands to elaborate fats. More important than the quantity is the effect of ingested fats on the quality of the fats contained. There is a marked change in the character of the fat in milk corresponding with the ingested fat; a difference in color and density of the fat. In this change may be found the cause of certain dyspepsias seen in infants when the mother eats unaccustomed foods.

**Treatment of Constipation in Children.**—G. H. M. Dunlop (*Edin. Med. Jour.*, October, 1909) attributes to neglect to attend to the calls of nature in early life the chief influence in the causation of constipation. He is often unwilling to interrupt his play and the responsibility falls upon the mother or nurse of seating the child at a fixed time daily, preferably after a meal. If no result is obtained in ten or fifteen minutes a suppository may be used. A glass of cold water should be taken night and morning. Systematic exercises causing the bending of the trunk on the legs are beneficial. Massage is occasionally successful but only as an auxiliary measure. In breast-fed babies constipation is sometimes due to maternal constipation caused by indolent habits or overuse of tea, or to deficiency of fat and sugar in the milk. A single bottle of malted food daily or greater dilution of milk, preferably with oatmeal water, and addition of cream may overcome the latter trouble. Excess of fat may, however, cause constipation. Orange juice and cod-liver oil are especially useful for rickety and scorbutic infants. Drugs should be avoided as their use easily becomes habitual and then inefficient. Sodium phosphate or milk of magnesia may be added to the feeding-bottle. Enemata and suppositories soon lose their effect if used repeatedly. A high enema of oil is sometimes serviceable. In older children coarse cereals, syrup,

brown bread with butter, green vegetables and fruit with the avoidance of white bread and starchy foods are the chief indications. Malt and cod-liver oil are invaluable in rickety and atrophic children. Cascara is the best drug given in small doses, three times a day.

**Treatment of Summer Diarrhea.**—C. H. Dunn (*Bost. Med. and Surg. Jour.*, November 18, 1909) summarizes the treatment of the diarrheal diseases prevalent in summer as follows: 1. Acute nervous diarrhea: Castor oil or calomel, boiled water for twelve or twenty-four hours, temporary dilution of food, paregoric in persistent cases. 2. Acute intestinal indigestion, type of deficient secretion, irritative diarrhea: Castor oil or calomel, boiled water for twenty-four hours, barley water or other carbohydrate solution for a second twenty-four hours, followed by dilute milk modifications, with low fat and casein and high sugar and whey proteid; irrigation of the colon in long-standing cases. 3. Acute intestinal indigestion, fermentation type, fermental diarrhea: Castor oil or calomel, boiled water for twenty-four hours, barley water for the second twenty-four hours; avoid proteid foods, such as albumen water or whey. It is safest not to begin milk-feeding till the third day, and then very cautiously, with modifications low in fat, whey proteid and casein. Living lactic acid bacilli are a specific against this disease and are given in ripened fat-free milk or in buttermilk, which is best begun after forty-eight hours. Irrigation of the colon in long-standing cases. 4. Infectious diarrhea: Castor oil or calomel, boiled water for twenty-four hours, barley water for the second twenty-four hours; subsequent feeding according to the type of indigestion also present; irrigation of the colon twice daily; antidyenteric serum in resistant cases.

**Etiology and Pathology of Noninfectious Melena of the New-born.**—A. Bonnet-Laborde (*Jour. des sci. med. de Lille.*, October 30, November 6, 1909) has made a study of noninfectious melena in the new-born, all cases of an infectious nature being excluded. Many different theories have been brought forward to account for these troubles. To distinguish between infectious and noninfections cases we have the following data: The date of appearance is not the same, that of the noninfectious being early, of the infectious, late; the noninfectious do not become generalized, while the infectious show many locations; the noninfectious do not recur continually until death follows as do those of microbic origin; the latter are accompanied by a bad general condition. With reference to prognosis, the infectious are generally fatal, the noninfectious are curable. The author gives the history of one case seen by him which had a hemorrhage appearing a few hours after birth, coming from the intestine alone, ceasing after two hours, and leaving the child in good general condition. Recovery was complete. The determination of the localization of the hemorrhage in the intestine depends upon the normal congestion of the intestinal mu-

cosa at birth. The sudden abolition of the utero-placental circulation favors this, as does the hypertrophy of the liver and spleen. This condition arose three times out of 1,200 deliveries. The author goes over the theories advanced: Prenatal ulceration of the intestine or inflammation, premature ligation of the cord, local alteration of the digestive tube after birth, lesions of the liver, respiratory troubles, anomalies of the circulation, lesions of the nervous system, and effect of cold. He concludes that the hemorrhage is determined by difficulty of respiration causing a marked increase of blood pressure resulting in extravasations and ulcerations of the mucosa of the stomach and intestines.

**Prolonged Infantile Tetany.**—H. J. Gerstenberger (*Cleve. Med. Jour.*, Nov., 1909) reports observations upon a case of tetany in a colored child of fourteen months in whom the symptoms had been present for a month when first seen. Breast-fed for six months, the infant was then given in addition meat, rice, gravy, bread, etc. Dyspepsia and slight rickets were noted at eight months. Weaned at nine months, the child received little milk during three months before admission and none for one week. No improvement was noticeable from the subcutaneous injection of an aqueous extract of ox parathyroid; therefore, this case cannot be considered as one due to an insufficiency of the parathyroid glands. This finding rather indicates that there are other causes for at least some of the cases of infantile tetany. A negative result following the subcutaneous injection of soluble calcium salts also speaks against any etiologic rôle of the parathyroid glands in this given case. Failure of the subcutaneous injection of calcium lactate to increase the excitability to the galvanic current argues against the theory that tetany is due to a calcium poisoning. The clinical symptoms ran hand in hand with the hyperexcitability as graduated by the galvanic current. Anodic hyperexcitability was not present in this case.

**Experimental Work on Hemorrhagic Conditions.**—W. P. Lucas (*Bost. Med. and Surg. Jour.*, Nov. 18, 1909) has tried the administration of rabbit serum, with results which he considers favorable for its further use, in three cases of purpura simplex, two cases of purpura hemorrhagica, one case of hemorrhage in the new-born, and in two cases of congenital hemophilia. The treatment in these cases was successful in all but one, which, as the autopsy report showed, was probably not a true purpura, but a secondary purpura in acute miliary tuberculosis. The dose of this serum runs from 10 or 15 c.c. in a mild case or a very young infant to 30 or 50 c.c. in a more severe case or an older child. In severe cases this dose can be repeated at four- to six-hour intervals; in less severe cases it is given once a day for several days or until no new hemorrhages have appeared for about twenty-four hours; sometimes only one or two doses are necessary to control quite severe bleeding. The cases in which it is most indicated

are those deficient in some one of the fibrin ferment precursors or in conditions in which these are unable to act; that is, in primary purpura where the prothrombin is absent, in jaundice where the proferments are not able to act; and to a markedly less degree it is of value in the hemophilic cases of the congenital type where there is a functional change.

**Cure of Club-foot in Infancy Without Operation.**—A. Ehrenfried (*Bost. Med. and Surg. Jour.*, Nov. 18, 1909) believes that practically all cases of congenital club-foot are curable without operation if taken in hand before the child is six weeks old. The younger the infant at the time of instituting treatment the better. The results are better than if treatment is postponed until operation becomes necessary. The routine treatment consists of manipulation, followed by a plaster bandage, every two weeks, progressively overcorrecting the foot. A plaster collar is first applied above the forefoot and allowed to dry. Then, with the foot in dorsal flexion and knee bent, the second bandage is applied in circular turns over the thigh and under the foot and the foot is held in abduction until the plaster has set. As soon as the foot offers no resistance to over-correction and maintains the normal position naturally, continued manipulation, a thin splint to be worn at night, or a brace if the child is old enough to walk. Relapses are bound to occur under any form of treatment if the after-care is neglected; the patient should be kept under close observation for one year after apparent complete recovery.

**The Question of a Psychic Influence on the Gastric Secretion.**—Hugo Nothmann (*Arch. f. Kinderheil.*, vol. li, parts i-iv) states that although the relation of the mind to the production of the gastric secretion in animals and in adults is acknowledged, no study of the psychic influences of gastric secretion in nursing infants has been made. In young infants there is little perception of outside factors and little action of the mind in any direction on account of a lack of mental development. The author therefore examined the gastric secretion of twenty-two infants, allowing them to go hungry for some hours, and then to suck the empty feeding-bottle for ten minutes, while they were not allowed to nurse; he then introduced a hollow sound to remove any gastric secretion that had been formed in the stomach. By allowing the infants to go hungry for twelve hours before the test he convinced himself that the stomach was empty. The children were from ten hours to twelve months of age. Some were breast-fed, others bottle-fed. Thirty-four tests were made. The children were allowed to suck for ten minutes, without getting any milk, before the gastric secretion was drawn off. Hydrochloric acid was found in nine cases tested, in most cases in very concentrated form. In others a high percentage of pepsin was present. The author considers it proved that the sucking of an empty bottle will cause secretion. When only the sound was introduced no secretion was found. In new-born children who

have never sucked, sucking an empty bottle causes gastric secretion to occur.

**Starch Digestion in Infants.**—Edmund Cautley (*Lancet*, Nov. 6, 1909) weighs the evidence and arguments for and against the use of starch in infant-feeding. He says that a diastasic ferment is secreted by the salivary glands and pancreas of newborn infants and even before birth. Its amount and activity are slight in the first few weeks of life and after that rapidly increase. The glands, notably the pancreas, can be trained by means of a starchy diet to the secretion of an increased amount of the amylolytic ferment. There is no inherent reason why this training should not be begun shortly after birth in the case of the bottle-fed infants instead of waiting until the child has attained the age of six months, as so commonly advised on purely theoretical grounds. Practical experience has shown that the usual barley water contains about 2 per cent. of starch. If mixed with an equal quantity of milk there will only be 1 per cent. of starch in the mixture. Such an amount is noninjurious and almost certainly is beneficial, for it encourages the growth of lactic acid bacilli and the formation of lactic acid. These organisms are of undoubted advantage in the prevention of the growth of proteolytic bacteria. If a starchy food is used in the first few weeks of life it is advisable to begin with a milk mixture which will not contain more than 0.5 per cent. of starch and to gradually increase the amount as the child gets older. Indeed, at any age when a starchy food is first given it should be in very weak solution and slowly strengthened up to as much as 3 to 5 per cent. If the stools become very acid, or if they give a distinct starch reaction, the percentage of starch in the diet must be reduced. Special care must be paid to these considerations in the first two months of life because of the deficiency of salivary secretion. Further investigations may possibly show that this is a point of little importance as the pancreatic secretion may be sufficient in quantity and activity. The evil effects of starch in early life are due to (a) excess; (b) its administration in the form of a more or less insoluble emulsion instead of as soluble starch; and (c) the substitution of starch for the necessary protein, fat, and salts. In other words, the mischief results from deficiency of necessary proximate principles of diet rather than from the presence of starch.

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### ORIGINAL COMMUNICATIONS.

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#### THE INCIDENCE AND CLINICAL CAUSES OF THE TOXEMIAS OF PREGNANCY.\*

BY

EDWARD P. DAVIS, M. D.,

Philadelphia.

**PATHOLOGY** and clinical experience teach us that the toxemia of pregnancy arises from deficient action of the maternal liver, ductless glands, placenta, intestine, and kidneys, causing a toxic condition in the blood serum. The occurrence of eclamptic convulsions depends upon the susceptibility of the nervous system, for toxemia may proceed to a fatal issue without the development of convulsions.

Eclampsia may be with or without convulsions. Eclampsia with convulsions is that familiar overwhelming of the nervous system accompanied by epileptiform seizures. Eclampsia without convulsions is seen in fulminant toxemia with intense headache, substernal pain, epigastric distress, violent emesis, and disturbed cerebrum.

Observation of patients during pregnancy shows that at two periods of gestation toxemia is most apt to develop. The first is in the early months before the placenta is fully formed; the second is in the later months when those changes are occurring in the placenta which precede labor.

If we accept the theory that toxemia results largely from the action of intracellular placental ferments, is it not significant that this condition should develop when the placenta is forming

\*Read at the joint meeting of the Philadelphia Pathological and Obstetrical Societies, Feb. 10, 1910.

and when it has reached its fullest development? Study of the nitrogenous excretion of pregnant patients shows that this excretion is most deficient at the two periods of gestation mentioned. The effect of toxemia upon the blood is seen in the fact that anemia develops in early pregnancy, giving place to a physiological plethora until the end of gestation.

The clinical causes of toxemia are predisposing or chronic, and acute.

As predisposing or chronic may be reckoned hereditary defective metabolism in gouty, constipated, neurotic degenerates; primiparous pregnancy above the average age; multiple pregnancy, and chronic alkaloidal poison, as in tea sots. Multiparæ with damaged viscera and women with chronic thyroid disease are examples of predisposing or chronic causes of toxemia.

The acute causes are exposure to cold and damp, exposure to heat and damp, ptomaines in food or developing in the intestine, syncytioma malignum, acute hepatic sepsis with yellow atrophy, and profound nervous shock.

How may one detect toxemia and recognize its causes with the hope of preventing eclampsia?

First, and most important, by the physical examination of the patient. It is not sufficient to examine the urine, nor can a case of toxemia be intelligently studied by urinalysis only. One experienced in obstetrics can recognize developing toxemia without the examination of the urine.

In physical examination the attention of the physician is first attracted by the abnormal state of the nervous system. Apathy, melancholy, neuralgic pain, hebetude, anorexia, exaggerated reflexes, deficient or exaggerated action of secretory nerves, pernicious nausea, epigastric crises, disturbances of vision, and disturbances in special senses are all symptoms of this condition.

The circulatory system shows as its most prominent symptom altered pulse tension of two sorts: the firm, heavy, constantly high-tensioned pulse, which is readily recognized; another and more dangerous variety, because sometimes overlooked, is the rapid pulse whose tension is not at first raised, but which develops high tension upon very slight disturbance. Heart sounds are exaggerated in force and tone. As the heart muscle becomes involved the sounds become obscured and less clear. In chronic toxemia with damaged heart, feeble heart action and rapid pulse with low tension are observed. In thyroid toxemia, rapid pulse with raised tension is present. In intestinal toxemia,

rapid pulse without high tension is observed, and when hepatic toxemia has caused degeneration of the epithelia of the kidneys pulse tension is usually high.

Asphyxia and venous engorgement are present in some cases with edema, in others with erythema and petechial eruptions.

The rapidity of the pulse does not coincide with its tension. The chronically rapid pulse is illustrated best in thyroid toxemia; the rapid weak pulse, in pronounced hepatic toxemia with rapidly developing pernicious anemia.

The anemia secondary to toxemia, so dangerous a condition in severe cases, may be clinically observed by noting the color of the mucous membranes—a dark vivid red—the flushed condition of the face, the slight jaundice which is so often present, and the evidences of hematin staining in different portions of the skin. Coffee-ground vomit and the discharge of coffee-ground material from the bowels are conclusive evidence of the altered condition of the blood.

In examining the thorax, not only should the condition of the heart be investigated, but substernal pain should be sought as a symptom of great importance. This often accompanies pressure upon the tip of the sternum, but in severe cases extends upward beneath the entire surface of the sternum.

In severe toxemia with crises without convulsions there is a constant tendency to pulmonary edema, which can be detected by altered signs at the bases of the lungs.

Physical examination of the abdomen in toxemia gives tenderness at the epigastrium, with more or less impaired peristalsis of the bowels, and a tendency to the accumulation of gas. The uterine muscle is irritable unless the toxemia be so severe that all the muscular tissues infiltrated with poisoned blood become partially parietic. Fetal heart sounds are quickened, or in severe cases dangerously slow. Fetal movements may be accentuated or lessened.

In many toxemic patients a distinct tendency to exophthalmos may be observed, and the thyroid gland is found altered upon physical examination.

We seek to recognize the causes of toxemia by methods of precision, and examine pulse tension by apparatus which gives a precise standard for estimation. The average pregnant woman in good health has a pulse tension not exceeding 160 to 175 mm. of mercury. In gradually developing toxemia this tension rises in accordance with the various organs involved, until just pre-

ceding eclampsia a tension of over 200 mm. of mercury is often observed.

A most valuable method for estimating definitely the degree of toxemia present consists in the inoculation of the blood serum of the patient in animals. Toxicity of the blood serum in toxemia is so increased that its injection into animals produces convulsions and death.

A fairly accurate idea of the condition of the blood may also be obtained by its microscopic study, the estimation of its color index, the number, condition, and character of its red and white cells, and the presence or absence of hematin in solution or in crystals.

Ophthalmoscopic examination is valuable, as it enables us to study the circulation of the retina where the vessels are small and delicate, and where typical examples of thrombosis and embolism may be observed.

The condition of the patient's nervous system may be investigated by studying the reflexes and the nerves of special sensation.

The attention of the profession has been largely directed to the study of the urine as our one reliable means of recognizing toxemia and threatened eclampsia. Valuable as this is, it is not our sole reliance, and the effort to depend upon this only for signs of danger has frequently ended in disaster.

The total quantity of urine passed by a pregnant patient may be difficult to ascertain; but in cases where so serious a condition threatens, no pains should be spared to get this important datum. In patients of average health, under accurate observation, I found 59 ounces in twenty-four hours the average quantity.

The specific gravity gives a fair general idea of the amount of solids present in the urine. Various methods of computation which utilize the specific gravity as a basis of calculating the total solids have been employed.

But the important element in the examination of the urine is the relative amount of nitrogenous excreta and the perfection of the nitrogenous metabolism of the patient. Urea is recognized as the finished product of nitrogenous metabolism. While the pregnant patient habitually stores up nitrogen to prepare her for the muscular trial of labor, and while the excretion of urea varies with the amount and character of the food taken, the fact still remains that a persistently lessened excretion of urea points to a pathological condition. To estimate accurately the significance of this phenomenon, the quantity of urine passed

in twenty-four hours must be known, and somewhat of the patient's diet.

While the quantity of urea is important as directing our attention to a more thorough study, the nitrogen partition of the urine, in my experience, has proven most valuable. For some time I have employed essentially the methods used in the laboratories of Cornell and the wards of Bellevue Hospital. The work has been done by Dr. Foulkrod in his private laboratory. I have found of practical import the quantity of ammonia nitrogen present, the quantity of rest nitrogen, the creatinin, and also the quantity of urea. Nitrogen partition has been especially useful to me in the toxemia of early pregnancy where the question of emptying the uterus was raised. While physical examination gave definite information as to the condition, the nitrogen partition was most useful in determining the gravity of the toxemia.

In intestinal toxemia the amount of indican is significant, and occasionally the presence and kind of sugar is to be considered.

The significance of serum albumin in the urine depends upon its quantity, and whether or not it is accompanied by kidney débris. A large quantity of serum albumin with granular, fatty, or blood casts, indicates kidneys whose epithelia are badly damaged. A considerable quantity of serum albumin with hyaline casts or cylindroids, indicates an overburdened kidney, but one whose epithelia are not dangerously damaged. It is significant that rapidly fatal cases of toxemia may show neither casts nor albumin in the urine.

A more minute examination of the urine gives information of great technical interest, but such examinations can rarely be made by practising physicians. It is, however, within the scope of obstetricians to study the urine in toxemia by the nitrogen partition; and those who employ this method as complementary to the physical examination of the patient will appreciate its value.

It is rarely possible to test the toxicity of the urine in toxemia by injection into animals. If such research be undertaken, it must be remembered that in toxemia blood serum is highly toxic and the urine less toxic than in health, while in health the blood serum is not toxic and the urine rich in materials excreted from the body.

It is not without the scope of this brief paper to ask whether we can control the physical causes of toxemia and eclampsia.

Evidently the regulation of the patient's ingesta is most important. The ideal food for the pregnant patient is milk, fruit, and bread. This may be varied by fresh fish, green vegetables, and toast.

The use of water, so important, is not a simple matter. Mild saline water is most advantageous, but the quantity taken must depend somewhat upon the patient's pulse tension, and especially upon the tendency to edema, whether pulmonary or cutaneous. To stimulate excretion without disturbing the patient, small doses of calomel, continued for ten days or more, are useful. It must be remembered that saline laxatives in intestinal toxemia often dissolve fecal matter in the bowel, producing fresh absorption. Compound licorice powder will secure a better evacuation. The tendency of cascara to fail to remove hardened fecal matter during pregnancy is disappointing to those who depend upon it. We must endeavor to modify a toxic blood serum by the use of salt solution. This may often be accomplished by first copiously cleansing the stomach and bowel by irrigation, and then leaving salt solution for absorption.

In cases of fulminant toxemia threatening eclampsia I have had excellent results by the Murphy method, the continuous instillation of salt solution. Baths, massage, and exercise are familiar means. The persistent use of oxygen has saved many patients from eclampsia, and many pregnant women instinctively satisfy their air hunger greatly to the discomfort of those about them.

In thyroid toxemia the administration of thyroid extract in one-grain doses, three times daily, given for from three to six months, in my experience, has been most beneficial. Patients have passed through pregnancy successfully, with the development of healthy children, who formerly had lost children and suffered themselves from toxemia.

In the crises of toxemia where the circulation is greatly disturbed, with exaggerated pulse tension, or deficient heart action, veratrum or digitalis may be employed, as indicated.

Recognizing toxemia as the cause of the altered nervous conditions present, one naturally avoids the mistake of drugging these patients with opium, chloral, bromides, or coal-tar compounds to quiet the nervous system. Prompt elimination, with hydrotherapy, is most efficient in treating these conditions. The state of the nervous system is the practitioner's most valuable index of the patient's danger, and the sensitiveness of this instrument of warning we scarcely desire to lessen.

DEDUCTIONS BASED LARGELY UPON A SERIES OF  
SEVENTY CASES OF ECTOPIC PREGNANCY  
TREATED SURGICALLY.\*

BY

J. WESLEY BOVEE, M. D.,  
Professor of Gynecology, George Washington University,  
Washington, D. C.

I AM not unmindful of the great honor conferred on me by the invitation to speak to-night to an audience containing men who have contributed so vastly to the fund of knowledge of gynecology and surgery. Last spring, when your invitation was extended, I was nonplussed by my inability to select a topic that had not been considered exhaustively by your able body. Nor do I feel at all sure I have brought anything of value to you even after months of deliberation.

For years the subject of ectopic pregnancy has furnished me a pleasing field for thought and study, and I shall refer to several phases of that condition. Ectopic pregnancy was not well known until the publication in 1836 of Dezeimeris' classification, and remained a very vague subject up to the appearance, in 1876, of the classical work of John S. Parry, of Philadelphia. After these came Tait's house-cleaning work of the pathology of this condition. This form of pregnancy had been occasionally noted, however, for nine hundred years. Many writers refer to Albucasis as being the first to clearly report a case of ectopic pregnancy. He was an Arabian physician living in Spain, where about the middle of the eleventh century he saw parts of a fetus escaping through the abdominal wall of a woman by the process of suppuration. During the sixteenth century, Platerus, Horstius, Polinus, and Primerose reported cases fairly well authenticated. Those of Nufer and Christopher Bain, both classical and overlooked by many historical writers on this subject, occurred about this time. It is probable that Jacob Nufer did the first abdominal section for extrauterine pregnancy, though his operation is considered as the classical first case of Cesarean section on the living woman. The report of it appears

\* Read at a meeting of the Buffalo Academy of Medicine, Feb. 15, 1910.

in the collection of Casper Bauhin, and is recorded in Von Siebold's History of Obstetrics, as follows:

"According to the relation of Casper Bauhin, in his appendix to the Latin translation of Fr. Rousset's writings upon Cesarian section, Jacob Nufer, a swine-spayer, at Sigerhausen, in Switzerland, in the year 1500, delivered his own wife by opening the abdomen, and the operation proved successful for both mother and child. The woman was pregnant for the first time, and when labor came on, and she had already suffered severely for several days, there had gradually assembled at her bedside thirteen midwives and several lithotomists. But all of them together were unable to relieve the poor woman of her child or to mitigate her suffering. Thereupon, the husband of the woman proposed to resort to the last means of saving her, and assured her that if she would take his advice he hoped, by the blessing of God, to bring the case to a successful issue. She gave her full consent, and Nufer persisted further in having the permission of the magistrate to his attempt. This, after some reluctance, was eventually obtained. Nufer next asked those of the midwives who had sufficient nerve for it to assist him in the delivery of his wife, while the more timid ones were requested to leave the room. Eleven of them chose the latter course, while two of them and all of the lithotomists remained to assist. The husband first besought the help of the Almighty, then closed the door, laid his wife upon a table and made an incision in her abdomen in the same way he was accustomed with the swine. He opened the abdomen so cleverly at the first incision that the child was safely extracted. When the eleven midwives outside the door heard the baby cry they desired admission, but this was refused until the baby was washed and the wound closed as in the swine. It healed rapidly. She was later confined four times and bore twins. The child delivered by the operation lived seventy-seven years."

Forty years later, according to Donatus, Bain's abdominal operation was deliberately done for the removal of a long-retained fetus. It is described as follows:

"In April, 1540, at Castrum Pomponii, commonly called Pomponischi, in the Province of the Lords of Gonzaga, not far from the river Po, there lived a woman whose name was Lodovica; but from her great size termed LaCavalla. She had been pregnant and the fetus had died in the uterus, while the soft parts had sloughed through the vulva and the bony portions

had been retained within her. She recovered and again became pregnant, followed by a rapid loss of flesh, and was reduced to a condition of great danger.

Christopher Bain, a traveling surgeon, happened by and offered to attempt to restore her for ten golden pieces if successful, and her body if she died. She and her relatives were very poor, and most of the money was raised by their good neighbors. The woman was tied up; he slowly cut through the abdominal wall, including the peritoneum, and at last opened the uterus and extracted the skeleton of a male child; he washed out the uterus with some warm wine and aromatics, and after cauterizing the edges of the wound, closed with a suture. She recovered and in a short time had other children born in good condition. Later she had four in all. Witnesses: Dominus John Baptist Zorzonus, and Alexander Begher, Dominus Frederick de Filini, and Dominus Leonellus Zorzonus, and Antonius Maiochus or Mazzuchinus, and several others, present at the whole operation."

This operation was probably for an ectopic gestation, and was done fifty-four years before that of Primerose. About this time Platerus did his operation successfully (1594). In 1604, according to Webster, the first case of tubal pregnancy was reported by Riolanus, the younger, and the same author regards the first case of ovarian pregnancy reported to be that of Mercurus, in 1614. But of abdominal pregnancy the first good account is by Joseph, in 1784, and the first clear description of interstitial pregnancy was by Dionis, in 1718. To Madame Lefort belongs the credit of having first reported clearly, in the eighteenth century, a case of developed ovum between the layers of the broad ligament, a condition that in 1836 was called by Dezeimeris "Subperitoneo pelvic" pregnancy. Lawson Tait's investigations led to the determination that practically all cases of extra-uterine pregnancy are originally tubal, becoming other varieties, often, by escaping from the tube. His views on this subject are generally accepted by the profession.

According to the records at my command, I have met with but seventy cases of ectopic pregnancy in my work. From the fact that I recollect several occasions when I have operated twice in one day for this condition and have had three patients at one time in the hospital suffering from it, I had thought my experience was much larger

*Classification.*—I have classified them anatomically as follows:

Tubal, sixty-seven (one complicated by uterine pregnancy); tubo-ovarian, one, and retroperitoneal (at full term), two. The specimen designated as tubo-ovarian was carelessly destroyed before it was studied microscopically. Consequently this classification will not withstand scientific criticism. Macroscopically, a fetal skeleton extended from the cavity of the tube through the abdominal end into the middle of the corresponding ovary which was adherent completely about the fimbriated end of the tube. It was apparently of about two months' development. The two retroperitoneal, full-term, specimens were instances of extraperitoneal tubal rupture without the fetus perishing until it had reached full term. In each no mistake could be made regarding the relation of the peritoneum to the fetus. In each the history of false labor was distinct. In one the fetus had been carried eight years, the woman giving birth to a living child three years before operation. In the other the operation was done eleven months from the beginning of the pregnancy. I find in the records rupture of the tube occurred thirty-eight times and tubal abortion twenty-four times. In a few operations done by the vaginal route the condition of the tube was not ascertained. In fifty-nine cases the side involved is recorded and in thirty-one of them the left tube was involved as against twenty-eight in which the right tube was affected. A belief quite common is that the right tube is the more frequently involved. Forty-four of the patients were white women, while twenty-six were colored.

*Causes.*—A great deal of speculation has been employed in the study of the etiology of ectopic pregnancy. It may be summed up in the statement that anything that will prevent passage of the fecundated ovum into the uterus may be a cause of ectopic pregnancy. At once it is apparent that the various developmental anomalies and pathologic states of the tube or ovary may bring about an ectopic position of the ovum. Whether nervous phenomena ever act as a cause of this condition, as former writers maintained, I am not convinced. Like one of mine, I believe others have had cases in which this condition quite promptly followed salpingoplastic operations.

*Complications.*—The various complications met were uterine fibroids, pyosalpinx, suppuration of the area adjacent to the injured tube, suppuration in coagulated blood that well filled the pelvis, cardiac disease, certain degrees of exhaustion from repeated efforts to check hemorrhage by attempts to clean out the uterus before admission to the hospital, nephritis, embolus,

pulmonary tuberculosis, prodigious hemorrhage, and infection of various kinds from introduction of instruments of different varieties into the uterus in attempting to produce abortion. In one case of full-term retroperitoneal pregnancy death occurred from pulmonary tuberculosis thirteen days after operation.

Probably the gravest complication is excessive hemorrhage, several of the operations with this special indication were done at night. In one the hemoglobin percentage was 10, the red blood-corpuscles 1,300,000, and the abdomen barrel-shaped. As her pulse was barely preceptible, the hemorrhage of twenty-four hours' duration and respirations short and gasping, operation was done at once. The amount of fluid blood that poured out of the abdominal incision was so very great that I wondered how life could be maintained. The bleeding was continuing and the tube was removed. No effort was made to remove blood or to search for a fetus. Seven days later the hemoglobin percentage had reached 60 and the reds 3,000,000. The question frequently arises whether to remove pathologic pelvic structures other than the affected tube. This must be left to the judgment of the surgeon. If the general condition of the patient be good, the surgeon rapid, and the auspices good, less risk accompanies such work. Certainly occasions will arise when the most rapid and wise surgeon will do nothing but control the blood-vessels that are bleeding. It will not be wise in some cases to even remove a pus tube that is very tempting or even to spend a few minutes in scooping out coagulated blood. The presence of a severe form of infection may overwhelm the patient after the most wisely and skillfully performed operation. The deadly work of the abortionist many times will not be overcome by the surgeon. In one case of uterine pregnancy I hoped to save the uterine pregnancy, but death from infection and abortion occurred, and the patient confessed at the time of the abortion to having had a catheter in the uterus forty-eight hours.

*Presence and Location of Fetus.*—The fetus was found in thirty-three cases, including the two full-term specimens. In the nine operated on by the vaginal route alone the fetus was found in two. In eleven operated on by the vaginal and abdominal routes combined the fetus was removed through the vagina in five and through the abdominal opening in four, while in but twenty of the forty-eight early pregnancy cases in which the abdominal route alone was used was a fetus found. The fetus was found behind the uterus eight times, four times in the

tube, in one partly in the tube and partly in a sac, in two cases in a small sac near the tube, once in a cavity formed by the tube and ovary, once on top of the bladder, and once on top of the uterus. In thirteen it was found in the lower part of the abdominal cavity. In two instances the fetal structures were apparently safely implanted among loops of intestine. In one of these a living four months' fetus was found. In this instance the history did not clearly determine the date of expulsion from the ruptured tube.

*Mortality.*—The thirteen deaths in my work were due to the following causes: secondary hemorrhage, two; profuse hemorrhage at time of operation caused by beginning by the vaginal route, three; shock, three, and one each from pulmonary tuberculosis (thirteenth day), embolus (forty-eight hours), exhaustion (ninth day), angina pectoris, and infection.

The five cases of secondary hemorrhage and hemorrhage at time of operation are all attributable to the employment of the vaginal route and are considered in discussing routes of operation. In the case of death from pulmonary tuberculosis a very severe operation had been performed thirteen days before for the removal of a full-term retroperitoneal pregnancy at the eleventh month. Pulmonary embolus occurred at the beginning of the third day of a case thought to be very promising. Death ensued in a few minutes. The three deaths from shock were in very severe cases that were not promising before operation. The patient dying from exhaustion on the ninth day vomited very freely from the time of operation to the end. The patient dying from angina pectoris had been treated for that difficulty six years and her physician curetted her two days before admission, believing an incomplete abortion existed. I have already referred to the case in which infection caused death.

*Treatment.*—The methods employed before abdominal surgery became so well developed have all given way to surgery. The injection of morphia and the employment of the electric current to kill the fetus with the expectation that nature would take care of the resulting condition were found to be too hazardous as compared to bold surgery. I am aware that many times is evidence found that nature can successfully cope with early ectopic pregnancy. Many times the abdomen is opened and the resourcefulness of nature thus found. I may say some gynecologists reprehend surgical intervention in all cases, sometimes permitting to nature an opportunity to deal with it. But, to

my mind, every case is a surgical one, and, while in some cases in which the hemorrhage has been very slight and perhaps ended or is so slow that the blood loss is as promptly repaired, deliberation is possible both as to selecting a time for operation and as to the speed of operating, there will be many others in which the opposite extreme, both as to delay and to speed will obtain. If the pregnancy is found in a tube before hemorrhage has occurred, removal of the tube without delay is a very simple and safe procedure. When rupture or tubal abortion has occurred the picture is changed. A calamity has befallen the patient and prompt hemostasis is imperative, as a rule. The plan of Robb and Simpson, of delay for perhaps only a few hours while tests of the condition of the circulation and of the general condition of the patient are made every few minutes, hoping the case may thus be placed in the elective class, is worthy of careful trial. I am very confident I have thus saved at least one woman. It must be admitted, however, that if at the end of a short time, say two hours, the indications are that hemorrhage and shock have not been reduced, valuable time has been lost. Therefore, whether operation should be done at once or delayed cannot be settled at this time, notwithstanding the subject was earnestly considered at a late meeting of the American Gynecological Society. If at once, haste will be the *sine qua non* of the operation.

*Routes of Operation.*—The routes employed for operation were the abdominal fifty times, the vaginal nine, and the vaginal immediately followed by the abdominal or *vice versa*, eleven times. In one of them there was a positive contraindication to the abdominal route as the five months' fetus and sac were lying behind the uterus, infected and discharging through a fistula into the vagina. Here dilatation of the fistula and emptying the pelvic abscess cavity with drainage was the sole procedure worthy of consideration.

About fifteen years ago I opened the abdomen of a young woman believed to be suffering from ruptured tubal pregnancy and an infection of the uterus and appendages in addition. I found the pelvic mass splendidly separated from the general peritoneal cavity. The color of the pelvic mass as thus exposed strengthened my belief in the diagnosis of ectopic pregnancy, but the history of chills and fever caused me to decide on attacking this mass through the posterior vaginal fornix, which was done. No pus, however, was found; and with much caution the

blood was removed and the cavity irrigated and lightly packed with gauze. The recovery of this patient was rapid and two years later was reported to me as having been perfectly well since leaving the hospital. It will be noted that the appendages were avoided in the operation. After this one successful operation by the vaginal route, five others followed during the next two or three years. At about this time a few writers reported excellent results in a larger series of cases of vaginal section for disturbed ectopic pregnancy, and I reported my six cases (*J. Am. Med. Assoc.*, 1897, xxix, 1294). In my enthusiasm I at that time urged: 1. that the vaginal route is preferable for operation for ruptured tubal pregnancy when the hemorrhage has ceased or is slow, the escaped blood limited to the pelvic excavation, and especially if a limiting diaphragm has formed about it. 2. That the vaginal route is freer from shock, is less liable to permit infection and furnishes better drainage. 3. That there is less liability to the removal of the adnexa than when the abdomen is opened. 4. That the period of convalescence is shorter and devoid of many of the usual complications of abdominal section. Shortly after reading that paper I was horrified by a fatal result for which I concluded the route and manner of operating were absolutely responsible. The death was from secondary hemorrhage, on the thirteenth day after a vaginal operation for ruptured tubal gestation. This patient was in a condition that, on retrospection, seemed a typical one for this procedure. She had made a splendid convalescence and had been out of bed sitting on a chair. Hemorrhage suddenly occurred and so enormous in amount that, in spite of heroic treatment by packing and the infusion of salt solution, she expired in about one hour. During the following six years I lost three other patients, in whom I employed this method. One died of secondary hemorrhage on the tenth day and the two others from severe hemorrhage that occurred during the operation. In one of these two, as soon as the vaginal incision was made, a gush of fresh blood occurred. The cavity was immediately packed with gauze and the abdomen rapidly opened. Rapid hemorrhage by the side of the gauze was discovered and the abdomen found to contain a large amount of loose blood. A fifteen weeks' fetus and a ruptured tube were hurriedly removed and a considerable quantity of salt solution run under the skin. The woman died of exhaustion in five days. In the other one a four months' fetus and a large amount of blood

clots with considerable pus were removed through a vaginal incision, when profuse hemorrhage began and, in attempting to temporarily control it, a large fluctuating mass in the hypogastrium suddenly collapsed. The abdomen was at once opened and a large quantity of pus was found loose in the peritoneal cavity. Two ruptured tubes, one having contained pus and the other a pregnancy, were removed. She died of shock in twenty-six hours. Lest harm might come from my advocacy of this route for ectopic pregnancy hemorrhage, I promptly published (*AMER. JOUR. OBST.*, 1903, *xlvi*, 58) these cases and tried to warn the profession against it. In eleven cases, three of which have just been mentioned, a vaginal incision was made and that promptly followed by abdominal section. In some of these a strong probability that infection was complicating the ruptured pregnancy caused me to hesitate to expose the peritoneal cavity, but abdominal section became a necessity before the operation was completed. In others, ectopic pregnancy was not suspected, but a pelvic abscess alone thought to be the indication for vaginal incision. And in the remainder the route was deliberately chosen for the existing ectopic, but found to be inefficient. I do not think abandonment of the vaginal route for reaching disturbed ectopic pregnancy advisable. But I unhesitatingly recommend its being limited to those cases in which active infection is present, the tubal hemorrhage long since ended, and the mass limited to the pelvis, to broad ligament cases, and to one other class, viz.: those very old cases in which the fetal structures are in the process of expulsion. In the presence of an active infective process, opening the abdomen with more or less liberation of infectious pus and distribution of it throughout the peritoneal cavity is extremely hazardous. If the hemorrhage has been completely checked the urgency is correspondingly lessened. If the time of last hemorrhage has been very remote and the mass limited to the pelvis, it is, I think, quite advisable to attempt relief by the vaginal route.

Every gynecological surgeon will be so misled at times that a diagnosis of pelvic abscess will be made, to be followed by a vaginal incision, only to find blood in liberal quantities and perhaps no pus. Without new indications other than a corrected diagnosis he may decide to complete the operation by an abdominal section. Or a fresh hemorrhage may impel such procedure. Unless the general state of the patient is very good,

such combination of the suprapubic and infrapubic routes will be unfortunate, as the jeopardy to the patient's life will be thus enhanced. In eleven of my cases that situation confronted me and the fatality was six. I am convinced the abdominal route alone, in the absence of acute infection is preferable and would have not ended so disastrously in the six cases. By no means would I approve of vaginal incision for diagnostic purposes, though readily admitting the differentiation between accumulations of pus or blood or of both behind the uterus is not easy and which condition is by no means uncommon owing to the habit many of these victims have of resorting to mechanical means to produce abortion. In my series one patient admitted having an abortionist insert a catheter into the uterus in a New England city, and travelling to Washington with it in place where it was allowed to remain two days after her arrival. By abdominal section a pus tube and ruptured pregnant tube were removed while her temperature was above  $102^{\circ}$ . Her recovery was a very stormy one. In seven (10 per cent.) of this series the use of such means was admitted. The number that did not confess is mere conjecture.

*Drainage.*—In the fifty cases in which the abdominal route alone was employed, I find suprapubic drainage by means of a glass tube was used for two days in three, and vaginal drainage by means of gauze in six. In all of the twenty in which a vaginal incision into Douglas' pouch was made, whether or not the abdomen was opened, vaginal gauze drainage was employed. That is, 18 per cent. of the abdominal and 100 per cent. of all the others were drained. Drainage was employed more commonly in my early work; I have come to regard drainage in ectopic pregnancy surgery as having a special feature of danger. The frequency with which blood clots have to be left in the peritoneal cavity and the great havoc likely to result from their becoming infected is that special feature. When an appendage or both or a fetal sac has to be liberated of adhesions, leaving considerable areas that cannot, for lack of time or tissue, be covered, then a light gauze packing over such areas and extended through the culdesac I believe is an advisable feature of the operation. I favor this form of drainage when the danger is behind the uterus. In infection of this area I believe the same rule applies. There will be cases in which the abdominal portion of the peritoneum has been exposed to infection from ruptured pus tubes or other sources in which

suprapubic drainage will seem imperative. But in uncontaminated early ectopic conditions I would particularly warn against the use of drainage, believing the danger of the introduction of infection by means of the drainage more than that of leaving even large quantities of blood, either fluid or coagulated, in the closed peritoneum. Little loss of time is experienced and little danger of infection probably accompanies placing the gauze for vaginal drainage, if the incision into the vagina is made from above and the gauze pushed into the vagina and even through the vulva by the uterine sound. Flushing out the peritoneal cavity was done three times, but not during the past fifteen years. At the time it was done flushing was in vogue in practically all abdominal operations. It has no place in the treatment of ectopic pregnancy, especially in early pregnancy cases.

*Advanced Ectopic Pregnancy.*—The time to operate in advanced pregnancy is a subject deserving special consideration. In this class again I would say a surgical operation is always indicated. This statement is made in the face of the fact that fetal remains have been harmlessly carried for fifty-two years.

Whether the fetus is living or has expired decides for some the time to be selected for the operation. Formerly the welfare of the mother alone was given consideration. The fetus was regarded only as a highly offending foreign substance. To rid the suffering woman of this foreign substance with the least risk to her life was the end sought. I confess to greater regard for the fetus nurtured in its normal location than for the one developed amidst abnormal environments, though evidence produced by Peterson in his paper read before the Southern Surgical and Gynecological Association last December has lessened this preference.

I believe there is very little opposition to the conclusion that the chances of rupture or of hemorrhage of a grave or fatal nature are so great during the first half of its developmental period that the life of the fetus is apt to be promptly terminated by malnutrition from the interference with its food supply. Therefore, the care of the mother alone seems to demand disregarding fetal life during this period. But what of the fetus found to be living after this turning point, or that has clearly survived the ordeal of rupture for a few months? That is, what consideration shall we give the fetus living and well advanced in development, and what, if dead, in the later months? The

former plan of treatment in these cases was based upon the danger of placental hemorrhage and consisted of waiting until the fetus had died, as it does at the end of nine months' development, and yet a few weeks more for the placenta to become a structure of less importance. But most surgeons have not delayed the operation for this reason and consequently the principal division was regarding disposal of the placenta at operation. Some have declared the safer procedure, on account of the great danger of fatal hemorrhage incident to attempts at extraction of the placenta, was to make no such attempt at once. The plan was to suture sac and placenta to the abdominal wound and allow them to slough away. Secondary placental hemorrhage and infection, either of which is chargeable for losses of life, was so great and the desire to do ideal surgery so strong that some advocated removal of the placenta at the time the fetus was taken away. I shall draw largely from Peterson's paper for statistics, as they are the most recent at my disposal. He found from Sittner's tables that in 95 cases (1813 to 1906) the placenta was removed with a maternal mortality of 21.05 per cent., while in seventy cases in which the placenta was left behind, the maternal mortality was 57.1 per cent. I cannot give you data as to how many fetuses were found living and how many dead in each class. This information would be very valuable, inasmuch as the living placenta is infinitely more liable to cause excessive hemorrhage than is the one that has been attached for some weeks or months to a dead fetus. But if the placenta can possibly be removed without such great danger, then this dreaded feature of the operation to remove a live fetus is at once obviated. Werder, in an article last year, strongly advocated its primary removal, and I believe logical and advanced surgery must adopt the same. If care is duly exercised, it is believed one will rarely find blood-vessels supplying an abdominal placenta that cannot be secured before efforts are made to detach it and I believe this plan of dealing with the placenta in such work will be universally adopted. This point having been gained, we can operate with impunity on the living ectopic pregnancy. If the fetus be dead, and particularly if it has been so several weeks, the proper treatment is to operate at the earliest time consistent with any existing conditions having a bearing on such matters. If the fetus be living, shall an effort be made to preserve its life by allowing it to attain its fullest possible antenatal development? One feature regard-

ing the mother and two regarding the ectopic fetus have now to be considered. Is the mother endangered by allowing the pregnancy to proceed to a stage at which the fetus has the greatest probability of surviving, *i. e.*, nearly or quite to full term? The danger to the mother is in secondary rupture of the gestation sac and its accompanying hemorrhage. Sittner found (see Peterson) that operation was done but eight times in 165 cases (4.8 per cent.) for this condition and, therefore, this question may be answered in the negative. The first regarding the fetus is, has it as good chances to live after birth as has the fetus developed in the uterus, and the second, will it be sufficiently free of important deformities to make its saving advisable? Sittner found that of 122 children born alive under these conditions sixty-three (52 per cent.) lived beyond the first month, twenty-three (20 per cent.) beyond the first year, six to or over six years of age and one reached the age of nineteen years. These statistics are not very cheering, as we know that about 93 per cent. of all live born children survive the first month and 80 per cent. the first year. But it is more than possible that, with the adoption of a rule to postpone operation until the living fetus is as fully developed as possible, the condition at birth will be very much better than in the cases compiled by Sittner, and the probability of a greater aggregation of life apparent.

Regarding deformities and lack of development of the fetus there seems to be a wide divergence of opinion. Price regarded nearly all ectopic children deformed and very much literary support to this contention is available. It is thought the environment of the fetus outside the uterus is such as to usually necessitate its growth under uneven pressure which results in such deformities of head and other parts as to render them incapable of living independent of the mother's circulation, or, if able to live, their existence is pitiable. Sittner found only ten of ninety-three of the children were seriously deformed, in five of which the deformity was so extensive as to cause death. Most were of the head and extremities. These statistics, then, seem to demonstrate that deformity or lack of development of the fetus does not occur in a sufficiently large percentage of cases to receive serious consideration in settling the point as to whether the life of the fetus should be given an important place in planning the treatment of advanced ectopic pregnancy. It has not fallen to the fortune of any operator, certainly not to

me, to have a sufficient number of variety of cases of advanced ectopic pregnancy to permit him to clearly deduce from his experience the proper plan of action in the various conditions of it. It becomes necessary, then, to pay much heed to such statistics as Sittner has gathered and they must practically guide us in the settlement of this question. I am convinced, then, that the advanced ectopic patient must be carried along and an elective operation done that offers the best for the fetus, under the same conditions as we would watch a woman with a deformed pelvis upon whom an elective Cesarean section is to be done. If the fetus is known to be dead in either instance the plan is accordingly changed.

"THE ROCHAMBEAU."

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## THE TREATMENT OF NONPUERPERAL PELVIC INFECTIONS OF THE UPPER PELVIC ZONE.\*

BY

ROBERT T. GILLMORE, M. D.,

Assistant Professor Clinical Gynecology, Northwestern University Medical School; Adjunct Gynecologist, Wesley Hospital; Gynecologist, Provident Hospital, Chicago, Ill.

THE striking changes in the modern treatment of both puerperal and nonpuerperal pelvic infections has been so revolutionary that it is with difficulty we are able to reconcile some of the more radical views. The accepted methods of yesterday are abandoned for the more scientific treatment of to-day, and all our energy for to-morrow is directed toward the decrease in mortality and in preserving the organs of procreation both for the object of maternity and to anticipate the psychic neurosis incident to female sterilization.

Pelvic infection is properly divided into puerperal and nonpuerperal infection. This paper will consider only the nonpuerperal variety. By nonpuerperal pelvic infection of the upper zone is meant an inflammation in which the main focus is localized outside of the uterus: in the tubes, ovaries, or perimetrial tissue—such as cellular or connective tissue surrounding the uterus or in the broad ligaments—although the primary focus may have been in the vagina, Skene's tubules, urethra, Bartholin gland, or in the endometrium. The exciting cause is one of the pathogenic microorganisms, mentioned in order of their frequency, *viz.*,

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gonococci, 43 per cent.; streptococci and staphylococci, 24 per cent.; colon bacilli, 5 per cent.; pneumococci, 4 per cent.; tubercular bacilli, 1 to 3 per cent. (Andrews(1)). The severity of the pathological condition produced by the introduction of one or more of the microorganisms into the living tissue produces a reaction called inflammation, which differs in character and extent according to the exciting cause.

The germ theory has blazed the trail for a more exact method of diagnosis, prognosis, and treatment in gynecology, as well as in other departments of medicine. The carefully analyzed statistics of individual experience and improved laboratory methods have all contributed toward a more definite scientific treatment.

Looking backward at the result of gynecological pioneers who persisted in radical abdominal operations in acute pelvic inflammations, we find an appalling mortality. The first distinct improvement in the treatment of these conditions was when statistics and personal experience called our attention to the high degree of mortality resulting from an indiscriminate abdominal section. On the other hand, when we consider the after-results of the radical procedure for chronic inflammation, and are confronted by the number of recorded cases of immediate death, the sequela of bowel obstruction, and in addition the complication of intestinal fistula, especially in the upper part of the small intestine where we have the added danger of a fatal termination on account of inanition due to the discharge of food before it has a chance to become assimilated, we are impressed with the strong arguments against operative procedure. Moreover, we must not overlook the plea for conservatism when the more remote contingencies of a radical operation are considered: chronic invalidism, mental despair, sterilization, etc. All these things being considered, it certainly seems that we are justified in postponing a surgical operation if only to allow the patient an opportunity to improve her physical condition before undergoing a radical procedure later on should it seem expedient.

The gynecologist begins to feel that in many cases we could not have any worse results if we endeavored to assist nature in restoring the damaged pelvic organs, so that the patient might at least live in hopes that she would eventually be restored to health. Finally, and *the most important*, there are quite a number of cases in which she has given birth to a healthy infant where the verdict of sterility, seemingly upon excellent authority, had been given.

In following the writer's own cases during the past ten years, he finds many of them eloquently suggestive of the advantage of a conservative treatment. To recite a case in point.

CASE I.—About ten years ago a woman came to him with an acute vaginal gonorrhea. Her history briefly was as follows: Widow, thirty-one years of age, no children, no miscarriages. Eight months previously she had contracted gonorrhea; a comparatively mild, local vaginitis, with no history of an extension beyond the os. She had been treated for this condition at the time, and supposed that she was entirely well. A few weeks before she came to the writer, she became engaged to be married. About ten days after a sexual indiscretion with her fiancé the latter had an urethral discharge, but firm in the belief that it must be due to a "cold," he did not seek medical advice and continued sexual relations. About two weeks after the urethral discharge in the man was first noticed, the woman had a violent attack of vaginitis accompanied a few days afterward by the signs and symptoms of pelvic invasion. A bacteriological examination showed the gonococcus. There was a febrile temperature and rapid pulse. The pelvic examination was extremely painful and showed a large sensitive mass in the base of the left broad ligament. The diagnosis was that of a gonorrheal cellulitis in the left broad ligament and a left salpingitis. The patient was advised to go to the hospital for a radical operation. After about two weeks of rest in bed, hot depleting douches of Epsom salts and glycerin, the temperature and pulse became normal, and the findings on making a pelvic examination were practically negative. The patient remained under observation for several years. She enjoyed a reasonable amount of good health with the exception of now and then severe exacerbations of localized peritonitis during a menstrual period.

Four years after the above-mentioned attack the patient had a very severe occurrence of pelvic inflammation. There was no evidence of a fresh vaginal infection. On examination, a bilateral salpingitis and cellulitis was diagnosed. The uterus was immobilized and the exudative mass extended about 3 inches above the symphysis. Her temperature ranged from  $99.5^{\circ}$  to  $102^{\circ}$ , the pulse was rapid, and the patient suffered agonizing distress in the pelvic region. She was admitted to the hospital and remained there for some three weeks with the treatment as mentioned in the first attack. At the end of this time the signs of the acute inflammation subsided, and the patient submitted to an abdominal exploration.

The author attempted to do a radical operation, but the adhesions and the pelvic pathology were so extensive that after doing an appendectomy he was convinced that further surgical interference would seriously jeopardize his patient's life; accordingly he packed the pelvis for hemorrhage and closed up the abdominal wound. After a stormy convalescent period the patient

was finally discharged, no better nor no worse than she had been during the years following her first attack of pelvic inflammatory disease. The writer believes that in this case his surgical interference was unjustifiable. The patient should have been spared the danger attending an abdominal operation, and if he had a similar case to deal with he would prescribe rest in bed with the atropine treatment, and, after the acute symptoms of inflammation had subsided, the hot-air treatment to absorb the exudate.

CASE II.—The writer would like to report one other case which is at present under his observation and which bears out the wisdom of conservative treatment. The patient is a married woman, thirty-eight years of age, family history as well as personal history not relevant. No children. No miscarriages. Last July, 1909, she complained of chills and fever, with pain in the lower part of the abdomen on both sides, and night-sweats. There was no vaginal discharge. Palpation elicited a tender definite mass on both sides of the uterus. Temperature ranged from  $99^{\circ}$  to  $102^{\circ}$ . Pulse averaged 120. She had previously suffered with painful urination, and this was exaggerated and especially annoying. The above symptoms continued with an increase in the size of the mass on either side of the pelvis. A blood count showed a leukocytosis of 18,000, Hg. 80. Urinary analysis: sp. gr. 1020, albumen present. No sugar. Casts finely granular and hyalin. Blood corpuscles were present.

A diagnosis of pus under pressure was made. A vaginal drainage was done and iodoform gauze was used for packing. It was supposed that due care had been used to insure a wide opening and that all the pus was evacuated. The gauze was removed two days later, the temperature gradually came to normal in about ten days with a diminished leukocytosis of 11,000, Hg. 80. A microscopical examination of the offensive pus showed a mixed infection of colon bacilli and staphylococci.

Fifteen days after the primary incision there was an increase in pulse, and temperature and pain were again present. The opening in the vagina was closed, and a wide incision was made, packed with iodoform gauze, and removed in two days.

Thirty days later there was a third relapse. Another incision was made, packed with gauze, and removed as previously done.

Several weeks later a definite mass could be palpated on either side of the uterus. The author confidentially informed the husband that in all probability he should be obliged eventually to do a radical operation.

*Present Condition.*—Within the past few days an examination of the patient has been made and careful palpation demonstrates a surprisingly normal condition. The uterus is fairly movable. There is no tenderness, and no mass can be detected on either side. The patient is enjoying excellent health. In this case the author feels justified in congratulating himself on his conserva-

tism, especially as the patient at no time would have objected to a radical operation.

Without tiring the members of this Society by detailing any more cases, the author begs permission to add that in many instances in the past he has had occasion to regret his radical procedures. And for the past three years he has yet to record a single instance where a conservative treatment of therapy, rest, and draining per the vagina has proved a disappointment, even though a radical operation was done later on. He believes that in ordinary cases of chronic pelvic infection with its various complications, it is rarely justifiable to do a radical abdominal operation until after a thorough trial of the hot-air treatment, rest, sunshine, and depleting douches of Epsom salts and glycerin have been instituted.

The classification of acute and chronic inflammation is of primary importance in the treatment of nonpuerperal pelvic inflammations. Whenever possible the exciting cause must be ascertained by bacteriological examination, aided by the history, the blood count, etc. When the tuberculin test is resorted to we must bear in mind the possibility of a secondary local infection starting from a positive tuberculin reaction. We must determine the location of the focus, and whether it is primary or secondary. It must not be forgotten that a localized inflammation of a gonorrheal infection of the female genitalia may become a general infection or a gonococemia at any time during its course in either the acute or the chronic stages, and by the continuity of tissue, or the circulation, or rhythmic uterine movements, may result in a peritonitis, pyelitis, a gonorrheal synovitis with endocarditis or meningitis, any or all of which may result in death.

*Acute Inflammation.*—The stage of inflammation is determined: 1. By the history. 2. By the constitutional symptoms, pyrexia, increase of pulse rate, and respirations. 3. By the white blood count. 4. By the pain.

*The treatment* is divided into: I. prophylactic; II. expectant; and III. vaginal drainage where there is a localized pelvic abscess.

A radical abdominal operation should never be done for an acute pelvic inflammation except in the case of an abdominal rupture of an acute pelvic abscess.

I. *Prophylactic measures* are directed toward limiting a gonorrheal vaginitis, and consist of rest, both physical and by the

administration of atropine sulphate. If the disease extends to the cervix, the Bier treatment has yielded satisfactory results, especially in the hands of the European gynecologists. If the infection extends to the uterine body, the Bier treatment should be stopped. Drs. Kugel and Esiki,<sup>(2)</sup> of the Dermatological Clinic of Austria and Hungary, at the University of Kolozsvar, claim that two-thirds of all cases of untreated gonorrheal vaginitis ascend to beyond the internal os, and that the per cent. is much less in all topically treated cases. While they plead for extreme conservatism in surgery, and for active therapy, they insist that there must be no topical applications when there is pain or fever, or during the menstrual period, or in the puerperium until after involution.

Perhaps one of the most startling departures from the various methods of treatment of the past, and a somewhat revolutionary suggestion for the routine treatment of the future, is that of Dr. Carl Schindler,<sup>(3)</sup> who first announced his theories before the Tenth Congress of the German Society of Dermatologists of Frankfort on the Main and Cologne. This report was elaborated and enlarged last June, 1909. Dr. Schindler contended that there must be some scientific explanation to account for the large per cent. of cases where the nonmotile gonococci extend beyond the internal os. Accordingly he carried on some extensive experiments on the uteri of living animals. He also removed those pelvic organs and by an ingenious device of forced artificial circulation was enabled to carry on the same experiments. From his observations he reports certain definite conclusions:

1. The uterus and adnexa have certain well-defined involuntary movements not influenced by the central nervous system.

2. A well defined rhythm.

3. Automaticity.

4. Periodicity.

The uterus, ovaries, tubes, ligaments, and vagina, all have their own irritability, independent of each other. Their rhythmic automatic movements usually follow synchronously with the uterus, especially when they are not in a state of fatigue. Under the sub-division of his paper entitled, "Special Physiology of the Uterine Movements," he says that asphyxia, in which the blood is overloaded with  $\text{CO}_2$ , produces an immediate quieting of the uterine movements which lasts until the arterial circulation has been well established.

The administration of 1 mg. of atropine, either by the mouth, locally by injection, or subcutaneously, paralyzes the uterine automatic movements for several hours. On the contrary, warm douches, poisons, heat, electricity, all increase the irritability of the involuntary movements.

Schindler therefore draws the conclusion that if a single gonococcus has passed the internal os, the most delicate therapeutic measures, even so much as a single sterile warm douche, may materially aid in the ascension of the gonococci by increasing the automatic movements of the uterus and the adnexa.

In 1905, Drenkhahn(4) enthusiastically recommended the use of atropine for quieting the uterine colic during puerperal infection and to prevent the further spreading of the infection. Even before Drenkhahn recommended the use of atropine, Tabora(5) had used it extensively for the quieting of the movements of ulceration of the stomach. Both of these men gave from 1 to 3 mg. of atropine sulphate daily either per os or subcutaneously. Tabora reports that he frequently administered atropine in these doses continuously for from four to ten weeks, and that the human being has a wonderful tolerance for high doses.

Schindler's theory is that if the Bier treatment is used, it is peculiarly effective because of the direct action of  $\text{CO}_2$ , and he calls attention to the fact that the routine practice of sucking for five minutes, with a pause of three minutes, does not accomplish the desired end, because the moment the circulation has become established the automatic contractions of the uterus come on at once and the discharge is spread upward over the entire surface. He thinks that the suction should be continued for from one-half to two hours without pause. He uses an ordinarily shaped speculum made of glass with an air-tight-fitting cover over the extremity and an Eschbaum pump or a rubber balloon. Under no circumstances does he ever use a warm douche. As soon as the complication of cervical gonorrhea is established he atropinizes the uterus, and uses mild solutions of silver nitrate, 2 per cent., or protargol, 1/4 to 1 per cent., in combination with 1 mg. of atropine to apply to the cervical canal. After the gonorrheal infection has passed the cervical canal, he warns against the use of the Bier treatment because of the tearing and dragging of the muscular tissue of the uterus and the danger thereby of increasing the inflammation. He finishes his article with these emphatic words: "In every case the systematic atropinizing of

the uterus with its quieting effect will be and remain the alpha and omega of the future gonorrheal therapy of women."

II. *The Expectant Treatment.*—Among the measures we have at our command are:

1. Rest in bed.
2. Quieting the automatic movements of the pelvic organs with atropine.
3. The pain should be controlled with one of the alkaloids of opium. Atropine sulphate, 1 to 3 mg. per day, or until the physiological action is obtained, not only quiets the uterine movements, but controls the pain.
4. It is important to give close attention to the elimination. Plenty of fluid should be administered and a careful lookout for any symptoms indicating an acute nephritis. The bowels should be regulated by enemas, cascara sagrada, or phenolphthalein. Castor oil, on account of its well-known action in stimulating uterine contractions (and counteracting the effects of atropine), should be avoided.
5. *Pyrexia.*—The ice-bag should be placed on the abdomen both for the pain and the fever. If in spite of the application of ice the fever goes beyond  $103^{\circ}$ , cold baths should be given at regular intervals to reduce the temperature and incidentally to increase the leukocytosis.

III. *Vaginal drainage* should be instituted when there is a fluctuating mass, a pelvic abscess, or in certain cases of pyosalpinx. Great care should be taken to see that all the foci have been evacuated and that the openings are sufficiently large to insure the complete evacuation of pus. In a certain percentage of cases this may be curative. Some gynecologists take the view that if possible we should wait and do a radical operation because the number of cures is so small that we are obliged to do a secondary operation. Personally, the author cannot believe that such a course is justifiable if for no other reason than that of subjecting the patient to a possible nephritis from the continual absorption of toxins which are eliminated by the kidneys, and the general lowering of the resistance from such absorption.

*Chronic Pelvic Inflammation.*—This is usually secondary to an acute inflammation, although it may be chronic from the beginning, as occurs frequently in salpingitis, ovaritis, peritonitis, and cellulitis.

*The treatment* is divided into operative and nonoperative.

- I. Under nonoperative, Bier's hot-air treatment is one of the

most important measures we possess. Dr. George Gellhorn,(6) of St. Louis, has devised an inexpensive apparatus for the administering of hot air. It consists of two telescoping cradles lined with asbestos and in which are eight sockets for 16- to 32-candle-power lights. There is an opening for the thermometer at one end. By removing one or two lights or by adding a higher candle power, any desired heat may be obtained. The telescoping feature is an advantage because a larger area than the pelvis may be treated if desired. In order to insure the dryness of air for the prevention of burns, Wilson and Reitler(7) suggest the use of calcium chloride so that it may absorb the moisture radiating from the skin. Gellhorn hangs the chlorides in small gauze bags to hooks which have been inserted in the telescopic frame of his apparatus, great care being exercised to keep the moistened chloride far enough away from the electric bulbs to prevent the possibility of explosion. The average patient stands the exposure of temperature to 220° of dry hot air.

Von Dr. Oskar Vertes(8) says that there are two prerequisites for the use of hot air:

1. An absolute normal temperature.
2. The absence of pain.

He emphatically states that the application of hot air should be stopped instantly upon the slightest rise of temperature. Vertes believes that no gynecological clinic can be considered as fully equipped without an apparatus for the administering of this treatment. He says it is very useful in intraperitoneal exudates, especially when such exudates are not of long standing. Therefore it is of particular value in postoperative complications.

II. The object of the Bier treatment is to create a local congestion thus causing a local leukocytosis.

III. The vaginal douches, combined with Epsom salts and glycerin, are of value for hydropic effects.

IV. The other methods are sunshine, fresh air, highly nutritious diet, general massage, hot hip pack, and cold and hot spinal douches. Due care should be given the psychological depression, and mental therapeutics should not be ignored. All these should be used with care directed toward proper elimination from both the kidneys and bowels.

*Radical Operation.\**—The extent and character of pathology in

\*The time to operate is when the acute symptoms have subsided, when there is a persistence of pelvic pain, and recurrence of acute exacerbation of pelvic peritonitis. Only then should surgical interference be considered when the above methods have been tried with no improvement.

the pelvis will determine the details of the radical operation. Perhaps one of the most interesting questions that confronts the gynecologist of to-day is the somewhat mooted one as to whether both ovaries should be removed *in toto*. The conservative operators contend that all normal ovarian tissue should be preserved in order to modify the intense symptoms of the menopause, as well as for the psychological welfare of the patient. While the advocates of the radical operation believe that they are justified in removing every vestige of the ovary on account of the future possibilities of periovaritis, cystic ovary, and for the not infrequent intractable menstrual hemorrhage which sometimes follows the procedure of conservative surgery.(9)

Tubercular and syphilitic inflammations have not been considered in this paper, as they are subjects by themselves. But care must be taken to differentiate them from other inflammations. The finding of the spirochete pallida Wasserman's reaction and the typical reaction from Koch's tuberculin is of course a positive method of diagnosis.

Dr. Oskar Frankl, of Vienna,(10) records that at the present time we must admit that the opsonic teachings of Wright have not accomplished what we at first hoped for them on account of the technic required for the opsonic index, which gives individual rather than universal and positive scientific results. He thinks that at this date there are many insurmountable difficulties to be solved before we will be able to utilize the theories which have been advanced by Wright and others on the subject of opsonins, and that the work done in the past is practically confined to the field of diagnosis.

The writer is of the opinion that when the results of the immense amount of laboratory and animal experimentation have been expurgated, and the scientific facts have been crystalized, the future treatment of infections will be along the lines of serum or vaccine therapy.

#### REFERENCES.

1. Dr. T. J. Watkins. Chapter XXV., Infections of the Ovaries. Bovée, The Practice of Gynecology. 1st Edition, 1906.
2. Drs. M. J. Esiki and E. Kugel. Ueber die Behandlung der Uterus Gonorrhoea insbesondere bei Prostituirten: mit besonderer Berücksichtigung der Adnexe. *Arch. d. Dermat. u. Syph.*, Wien u. Leipz., 1909, xcvi, 261-302.
3. Dr. Carl Schindler. Experimentelle Beiträge zur Kenntniss der automatischen Bewegungen des Uterus und deren

Bedeutung für die Pathologie und Therapie der uterinen Infektionskrankheiten insbesondere der Gonorrhoe. *Arch. f. Gynäk.*, Berl., 1909, lxxxvii, 607-642.

4. Drenkhahn. Atropinanwendung in der Frauenheilkunde. *Therap. Monatsh.*, Febr., 1905 (cit. Dr. Carl Schindler).

5. Tabora. Die Atropinbehandlung des Ulc. ventriculi. *Münch. med. Wochenschrift*, Sept., 1908, No. 38 (cit. Dr. Carl Schindler).

6. George Gellhorn, M. D. Dry Heat as a Therapeutic Factor in Gynecology. *AMER. JOUR. OBST.*, July, 1909, page 31.

7. Quoted from Dr. George Gellhorn. *AMER. JOUR. OBST.*, New York, July, 1909.

8. Von Dr. Oskar Vertes. Die Heiseluftbehandlung in der Gynäkologie. III. Jahrgang, 1909, 7. Heft, *Gynäkologische Rund. Zentral. für Geb. und Frauenkrankheiten*, Wien.

9. Von W. Zangemeister. Wann sollen bei der Ovariectomie beide Ovarien entfernt werden? *Praktische Ergebnisse der Geburtshilfe und Gynäkologie*, vol. i, 1909.

10. Von O. Frankl. *Praktische Ergebnisse der Serologie für die Geburtshilfe und Behandlung. Praktische Ergebnisse der Geburtshilfe und Gynäkologie*, vol. i, 1909.

103 STATE STREET.

## UNILATERAL TWIN TUBAL GESTATION.

### REPORT OF A NEW CASE AND SUMMARY OF FORMER CASE REPORTS.

BY

EUGENE H. POOL, M. D.,

Attending Surgeon to the French Hospital; Associate Attending Surgeon to the  
New York Hospital,

AND

F. ROBBINS, M. D.,

New York.

(With one illustration.)

THE comparative rarity of twin tubal pregnancy in one tube has led us to give a brief description of such a case which was met with at the French Hospital in the service of one of the writers and to supplement this report with a summary of the reported cases.

M. G., French, twenty-seven years of age, entered the French Hospital on November 1, 1909, complaining of severe cramp-like pain in the left lower quadrant of the abdomen, bleeding from the vagina, and weakness.

Eight days before admission, at about 11 P. M., the patient had a feeling as if her bowels were going to move, and on rising from bed she was seized with sudden pain in the above-mentioned region. The pain was intermittent and radiated over the whole abdomen. The last menstruation began on September 27, at the regular time and continued until October 31, with brief inter-

missions. No periods had been missed. Urination was normal, bowels markedly constipated, appetite very poor. She had not vomited nor felt nauseated, and had had no fever, chills, night-sweats, or cough. She felt very weak and thought she had lost weight during the last month.

She had never had a similar attack and had always enjoyed good health. She began to menstruate at thirteen, the periods lasted about four days, flow moderate and almost painless. She had been married seven years. Five months after marriage she had a miscarriage of three or four months, but had never been pregnant since. She denied having had any symptoms suggestive of gonorrhea.

Habits good. Family history, negative.

*Physical Examination.*—Thin woman, mucous membranes and skin pale, general examination negative.

Local examination revealed a slightly enlarged anteflexed uterus, behind and to the left of which could be felt a tender, smooth, immobile mass, evidently the left tube. The size of the mass seemed to diminish during examinations on the operating-table, and it was thought that it had been ruptured by the manipulations.

Blood examination on November 1 showed hemoglobin 62 per cent., leukocytes 19,200, polymorphonuclears 84 per cent.

*Operation.*—By a semilunar, Pfannenstiel incision, the abdomen was opened and a moderate amount of fresh blood found in the abdominal cavity, also some blood clots in the pelvis. Posteriorly and to the left of the slightly enlarged uterus was found a mass which was readily freed and brought into the wound. It proved to be the much-enlarged left tube which had ruptured and was bleeding freely. There were two fetuses attached by separate cords to one placenta at the outer part of the tube. In one fetus the arms and legs contracted and extended for about a minute after exposure to the air. The tube was removed, the ovary being left intact. After the removal of clots and blood, the abdomen was closed in the usual manner. The wound healed by primary union and convalescence was uneventful.

*Description of Specimen.*—The specimen consists of a Fallopian tube about 12 cm. long. The inner part, 4 cm. long, is only slightly thicker than a normal tube, but the outer part is greatly enlarged, measuring about  $8 \times 4.7 \times 2.5$  cm. The surface of this portion is smooth except at the outer part of the posterior surface where the tube is ruptured. The interior is filled with an adherent blood clot, at the upper part of which may be seen the placenta and the edge of a thin retracted membrane, the remains, apparently, of a single amniotic sac. From the placenta pass two cords 3 cm. long, separated 2 cm. at their attachments. To each cord is attached a fetus. The fetuses are of the same size and development, their vertex-coccygeal measurement being 3.3 cm.

*Summary of Former Case Reports.*—Schauta refers to nineteen

cases of tubal pregnancy with twins in the same tube, but without enumerating them, and Costa speaks of eleven cases as positive, and fifteen cases as presumptive examples of unilateral tubal pregnancy with twins. Pulcher enumerates eighteen and McCalla\* twenty-five cases. A study of the available literature leads to the exclusion of some cases which have usually been cited as positive, and the addition of other cases which are not included in any lists. We have therefore been led to append a new list. It must be stated, however, that the aggregate of the positive and doubtful cases has so constantly increased during the preparation of this list that we do not feel that it is possible to claim completeness. The element of uncertainty in many of the doubtful cases is introduced through the question as to whether in a given case there was a repeated rather than a coincident or true twin gestation. For instance, when the two products of conception consist of a fetus and the degenerating remains of a fetus, such findings are suggestive of a twin tubal pregnancy with arrested development of one fetus, but the evidence is not conclusive.

#### POSITIVE CASES OF TWIN PREGNANCY IN ONE TUBE.

*De Ott.*—Presentation before Petersburg Obstetrico-Gynecological Society, April 11, 1889, of an anatomical specimen of tubal twin pregnancy. Both fetuses were three and a half months old, or a little over. (Vratsch, *Annales de Gyn.*, 1891, ii, p. 304.)

*Strocker.*—Anatomical specimen, presented before Berlin Medical Society, March 2, 1892, obtained from a woman thirty years of age who was found dead in bed. At autopsy the abdominal cavity was found to be filled with blood; the uterus was enlarged to two or three times its normal size. Right adnexa healthy. The dilated left tube was connected with a sac which reached into the true pelvis, and contained two fetuses; one of these lay in part in the distended tube. The twins are separated by an amniotic partition; the lower portion of the sac was filled with a single placenta; the cords were inserted close together.

*Saenger.*—Case of patient who was operated upon for symptoms of ruptured tubal pregnancy. There were twin fetuses developed in the interstitial portion of the right tube, having independent amniotic sacs; a third fetus had developed in the abdominal portion of the tube. (*Centralblatt f. Gynäk.*, 1893, p. 148.)

\* *Surgery, Gynecology and Obstetrics*, vol. viii, March, 1909, No. 3.

*Kirchhoff.*—Patient operated upon for extrauterine pregnancy. There were two embryos in the same tube, measuring 11 mm., corresponding to about the fifth week. They were grown together, forming a thoracopagus. They had a common cord up to 5 mm. from the junction of the embryos, where it divided



FIG. 1.—Unilateral tubal twin pregnancy.

into two branches, one going to each. (*Centralblatt. f. Gynäk.*, 1894, p. 232).

*Folet.*—Case of a woman who fifteen years previously had presented all the signs of pregnancy, terminating in missed labor. Laparotomy showed a twin extrauterine pregnancy, with a single sac. (Although the disparity in the size of the

fetuses in this case suggests consecutive rather than a simultaneous pregnancy, the presence of only a single sac renders it difficult to exclude this case from the list.) (*Gaz. Méd. de Paris*, No. 11, 1895, page 127.)

*Brodier*.—Patient thirty years of age, laparotomy for extra-uterine pregnancy. Right tube was found to be normal; right ovary enlarged, undergoing cystic degeneration. Left tube was ruptured and in the clots were found two fetuses, about 7 1/2 cm. in length. (*Revue Internat. de Méd. et de Chir.*, No. 7, 1896.)

*Le Dentu*.—Case of twin tubal pregnancy, with a single sac. The patient was admitted to the hospital with the signs of grave abdominal hemorrhage. Laparotomy as an emergency procedure; withdrawal of two embryos, of seven to eight weeks, from the diffuse bloody mass. The left tube presented a pocket filled with clots, and a placenta-like mass. Right adnexa normal. (*Bull. de L'Acad. de Méd. de Paris.*, iii, 1896.)

*Cargile*.—Operation upon a patient twenty-six years of age for ruptured tubal pregnancy; right tube normal, left tube ruptured, uterus slightly enlarged. In the abundant clots twins were found. The rupture occurred in the ninth week. (Letter to the editor of the *American Gynecological and Obstetrical Journal*, dated November 27, 1896, from Dr. Charles H. Cargile, of Bentonville, Ark.)

*Barbat, J. H.*—Patient, age thirty-three. Diagnosis of tubal pregnancy. Operation showed right side of pelvis filled with a mass connected with the right horn of the uterus. In separating the adhesions, the mass broke and a quantity of bloody fluid escaped in which was found a fetus of about two and a half months. A second fetus of the same size was found in washing out the remaining blood clots. On examination, the removed specimen proved to be a twin pregnancy in the right Fallopian tube. (*Pacific Record of Medicine and Surgery*, vol. xiii, No. 7, 1899.)

*Krusen*.—Triple ectopic gestation. The right tube was involved, and at the time of rupture contained three perfectly formed fetuses, in the second month of gestation. (*American Medicine*, January 4, 1902.)

*Ferroni*.—Case of tubal twin pregnancy in the same tube. The patient was a woman thirty-two years of age, who had had seven normal pregnancies and deliveries, the last a year previously. Operation on account of pain and hemorrhage. The left tube presented two enlargements, sharply separated by a small

portion of undistended tube. The examination showed that each of the sac-like bulgings of the left tube had contained a developing fetus. The condition was one of tubal twin pregnancy, with two independent sacs, and twin fetuses apparently of about the same age though somewhat unequal in size. (*Centralblatt. f. Gynäk.*, No. 9, 1903.)

*Lucas-Championnière* (Jacquemin).—Twin pregnancy of right tube. Laparotomy, with ablation of right ovary and tube in a nullipara twenty-eight years of age. The amniotic sac consisted of the entire right tube; there were two fetuses, measuring over 8 cm. The anatomical examination showed the presence of a single placenta and two cords. (This observation is classified by Costa as doubtful, but from the original records of the case there seems to be no valid reason for excluding it from the list of positive cases of unilateral tubal pregnancy with twins. (*Bull. et Mém. de la Soc. de Chir. de Paris*, 29, 1903; *Bull. de la Soc. Anat. de Paris*, 78, 1903.)

*Albertin*.—Laparotomy upon a patient twenty-eight years of age, for a large right-sided ovarian cyst. A tumor the size of a fist was found in the left tube, close to the horn of the uterus. On examination, this tumor proved to be a twin tubal pregnancy, arrested at the second month (probably a year before, according to the patient's menstrual history). The wall of the tube was much thickened; the interior contained no fluid. (*Lyon Medical*, December 27, 1903.)

*Zuntz*.—Patient operated upon for "inflammatory tumor of the adnexa." The thickened right tube was removed; it presented a tear several centimeters in length, and the lower wall was connected with the placenta, which had one umbilical cord still adherent to it. In the clotted blood between the intestines, two fetuses were found, 7 and 8 cm. in length. Recovery. (*Erfahrungen über Tubargravidität. Archiv für Gynäkol.*, vol. lxxiii, 1904.)

*Michin*.—Case of multipara, aged thirty-two years; history of operation for left-sided tubal pregnancy two years before (vaginal evacuation). The present operation showed two embryos embedded in a cavity of the left tube.

(*Monatschrift f. Geburtsh. u. Gynäk.*, vol. xxii, 1905, p. 455.)

*Spinelli*.—Case of twin tubal pregnancy and anatomo-histological contribution on the modifications of the opposite tube. The patient was a woman of thirty who had repeatedly shown symptoms of tubal abortion. The tube was the seat of a twin

pregnancy of three months' duration. The other tube was likewise removed. Recovery.

(*Atti del la Societa Italiana di Ostet. e Ginecol.*, 1904, Roma, 1905, x, p. 216.)

*Pulcher, J.*—Patient aged twenty-nine years. Diagnosis, left hematocele. Laparotomy. Left tube size of fist was removed. On examination it presented a cavity lined with a smooth, glistening, membrane, divided by a translucent septum into two chambers of unequal size. Each of these chambers contained a well-preserved embryo about 2 cm. in length. Each umbilical cord was about 1 cm. long and inserted approximately in the middle of the septum.

(*Zwillingsschwangerschaft in der Tube. Inaugural Dissertation*, Heidelberg, 1905.)

*Cameron.*—The existence of a twin pregnancy in one tube was discovered in the course of preparing the extirpated gravid tube after its removal on account of rupture. The patient gave a history of seven weeks' amenorrhea and the embryos were probably about the sixth week. The umbilical cords arose very close together and each fetus had a complete amnion.

(*Lancet*, December 29, 1906.)

*McCann.*—The left tube of a woman, thirty-five years of age, who had missed two periods, contained two fetuses enclosed in one amniotic sac.

(*Journal of Obstetrics and Gynecology of the British Empire*, x, 1906.)

*Rutherford.*—Twin tubal pregnancy, left side, in multipara, aged thirty-nine years. On opening the abdomen, a placenta and two fetuses were found among a huge mass of blood clot from the ruptured tube. In the prepared specimen, one fetus could still be seen developed in a separate amniotic sac.

(*The Lancet*, March 30, 1907.)

*Costa.*—In this case of unilateral twin tubal pregnancy, there was a sac divided into two compartments, each of which contained a male fetus, one weighing four grams, the other 4.5 grams; the length of one was 5 cm., of the other 5.3 cm.

(*Annali di Ostet. e Gynecol.*, vol. xxix, 1907.)

*Rosenberger.*—Case of twin pregnancy of left tube, two fetuses of three months found in tube. Death.

(*Orvosi Hetilap*, No. 1, 1907, p. 35. *Jahresbericht f. Geburtsh. u. Gynäk.*, vol. xxi, 1907, p. 587.)

*Child.*—Case of unilateral twin pregnancy in a woman thirty-

five years of age, who had previously borne twins. At the operation for ruptured ectopic gestation, twin fetuses were found lying outside of the left tube, one attached by its umbilical cord, the other free. The twins were of equal size, measuring 8 cm. in length, and possessing but one amniotic sac. The right tube was intact.

(*Journal Amer. Med. Assn.*, December 28, 1907.)

Amann.—Demonstration before Munich Gynecological Society, January 23, 1908, of a twin tubal pregnancy in one tube. The fetuses were about twelve weeks old, and were enclosed in separate amniotic sacs.

(*Centrlbl. f. Gynäk.*, No. 24, 1908.)

Taylor, H. N.—A woman aged twenty-one years, after three or four months' amenorrhea, suffered for several days from abdominal pain and faintness; then had a severe attack of abdominal pain, terminating in syncope. Condition became worse in next two days with symptoms of internal hemorrhage. Laparotomy was performed upon suspicion of extrauterine pregnancy. Ruptured tubal sac with twin fetuses attached was removed. (Side not stated.) Recovery.

(*Lancet*, January 23, 1909, p. 235.)

Prof. Treub's Case.—Dr. Thomas S. Cullen has kindly sent the following information: "Personally, I have not had any cases of twin tubal gestation. I operated on a patient, however, with ruptured extrauterine on one side. During my absence two years later a colleague removed a ruptured extrauterine from the opposite side. We have had several cases of this kind at the hospital. When in Amsterdam three years ago I was talking with Professor Treub and he gave me a picture showing five embryos apparently between three and four months. They came from a tubal pregnancy. This case did not come under Dr. Treub's personal observation, but occurred in the service of a colleague in one of the other Dutch cities."

The following observations were properly excluded from the list of positive cases by Costa:

Varnier and Mangin. *Journal de Medicine de Paris*, 1785, Tome lxxv.

Haydon. Transactions Obstetrical Society, London, v, p. 280.

Robinson. *New York Medical Journal*, June, 1892, p. 690.

Fenger. *Centralblatt für Gynäkologie*, 1891, p. 1027.

Salin. *Svenska Läkaresällskapets Förhandlingar*, 1895, p. 180.

Cestan. Thèse de Paris (quoted by Le Dentu).

Michinard. AMER. JOUR. OBST., vol. xxxiv, 1896, p. 36.

Heinricius and Kolster. *Archiv für Gynäkologie*, vol. lviii, H. i, 1899.

Prewitt. *Medical News*, June, 1897.

Coe. AMER. JOUR. OBST., vol. xxvii, 1893, p. 855.

Saniter. *Zeitschrift f. Geburtsh. u. Gyn.*, vol. lv, 1905, p. 492.

Racoviceanu and Bogdanovici. *Centralblatt f. Gyn.*, No. 47, 1904, p. 1469.

Schauta. *Centralblatt f. Gynäkologie*, No. 2, 1905, p. 45.

To this list may be added the following cases:

Cameron (*The Lancet*, December 29, 1906) is authority for the statement that a specimen of unilateral twin tubal gestation was recently exhibited to the British Gynecological Society.

Johnson (*Boston Medical and Surgical Journal*, March, 1894). Among six cases of extrauterine pregnancy, Johnson reports one 'of pregnancy in both tubes at the same time, with the possibility of there also being a twin pregnancy in the left tube. The patient was a nullipara, thirty-six years of age.

Rupin (*Gaz. des Hôpitaux*, No. 16, 1860, p. 63). One six months' fetus extracted by vaginal section, death. Autopsy revealed in pelvis the bones of another fetus apparently of four months' development.

A series of old cases, some of which we are unable to verify, is given by Webster in "Ectopic Pregnancy," p. 109. Among them is Trezevant's case, which was probably a consecutive pregnancy. A picture of tubal pregnancy with twins, showing both ova in the same tube opened, with parts of the fetuses, is given on page 423 of Schraeder's "*Lehrbuch der Geburtshilfe und Gynäkologie*," Bonn, X. Ed., 1888.

128 E. SIXTY-FOURTH STREET.

## ERYTHEMA MULTIFORME GESTATIONIS.\*

BY

WILLIAM S. GOTTHEIL, M. D.,

New York.

(With three illustrations.)

THERE is not much on record of the dermal manifestations due to the toxemia of pregnancy; yet my belief is that they are of not very rare occurrence. It is certainly unusual, however, to have personally observed successive attacks of a severe der-

\* Read before the Section on Obstetrics and Gynecology, New York Academy of Medicine, February 24, 1910.

matosis undoubtedly dependent on the pregnant condition. In view of these facts the following case may be of interest.

Mrs. Mollie P., thirty-three, admitted to Lebanon Hospital November 29, 1909. Is now suffering from her fourth attack of a general dermatosis occurring in pregnancy and lasting through the puerperium and beyond it. In three of these attacks she has been under my care.

*First Attack.*—On December 3, 1901, being then twenty-five years old, married one year, and pregnant eight months, she



FIG. 1.—Erythema multiforme gestationis.

was brought to my office by Dr. Berow. For three months there had been itchy pimples around the nipples and umbilicus, and three weeks ago these had begun to spread over the entire body. The pruritus was intense, preventing sleep, yet her general condition was not bad and there were no constitutional symptoms. Most of the body, with the exception of the face, palms, and soles, showed the skin reddened, thickened, and covered with many scratched papules and excoriations; this condition was most marked on the anterior abdomen, and was evidently the eczematous early eruption. The eruption that had appeared during the last weeks was entirely different, being a typical erythema multiforme; it was most marked on the



FIG. 2.—Erythema multiforme gestationis.

anterior forearms and thighs and the lower abdomen. The lesions varied from pea-sized papules to dollar-sized beautiful iris patches. The photograph of the forearm was taken at that time. I did not see her again until the third attack, when the patient stated that the eruption of 1901 disappeared four or five weeks after I saw her; *i.e.*, immediately postpartum. The baby died at the age of six weeks, with a skin eruption which the mother says was exactly the same as her own; and she affirms that Dr. Berow said that it was the same disease.

*Second Attack.*—October 29, 1902. This time the eczematous eruption and the multiforme erythema occurred separately; I did not see the patient, and have only her history. In the second month of her second pregnancy the itchy general papular eruption appeared again, but got well under treatment in four weeks. On the morning after this confinement there suddenly appeared a general eruption of "water blisters," just like the 1901 eruption, this got well in six weeks. The baby of that confinement was well, and is living yet.

*Third Attack.*—Pregnant for the next time in the spring of 1905; baby born September 29; infant well. In the tenth week of her pregnancy occurred a very bad eruption of blisters over the whole body, some of which were egg-sized; they contained water at first, later matter. Was in Sydenham Hospital for several weeks; discharged improved, but has had more or less skin eruption during this entire pregnancy and puerperium. Now, Beth-Israel Hospital Clinic (October 29), four weeks postpartum, the body is deeply stained with irregular dark areas, where she says blisters had been present during the last eight months. Some small bullæ and many excoriations are still present on the trunk and arms, but her legs are in very bad shape. They are covered with large vesicles and small bullæ, crusts of dried blebs, blood crusts, etc. The picture of the leg was taken at that time; new vesicles appeared daily on the legs, so I took her into the skin service at Lebanon Hospital. She improved rapidly there under a boric acid wet dressing, and was discharged cured on December 3.

*Fourth Attack.*—On December 2, 1909, I found her again in Lebanon Hospital. She had not been pregnant in four years, and her skin had been clean. Became pregnant about the beginning of August of that year; three weeks later an eruption looking like measles, and itching intensely, appeared. Aborted October 17. Nevertheless the eruption persisted; and about the



FIG. 3.—Erythema multiforme gestationis.

middle of October large blisters began to appear, and have gotten worse and more abundant. At the present time she has a very extensive bullous eruption of the arms and hands, some of the blebs being several inches in size, interspersed with papules, blood crusts, and excoriations. On the abdomen and thighs are large typical areas of erythema, with purplish and paling centers and vivid pink and papular advancing margins. Some of the smaller lesions have central vesicles and are distinctly iris in form. General health good, excretions normal, no febrile movement. This eruption disappeared in about one month.

To recapitulate: Patient, otherwise entirely healthy, has been four times pregnant since her marriage in 1900. Each time when her pregnancy has been a few weeks old she has had a severe attack of erythema multiforme, the lesions in the early parts of the outbreaks being papular and erythematous, later of the iris form and vesicular, and finally bullous. This eruption persisted during the entire pregnancies, and continued for from four to eight weeks postpartum. Three of the attacks have been personally observed. Treatment, save in so far as it alleviated the pruritus and protected the denuded surfaces, has not been of much effect. On the other hand, termination of the pregnancy and of the postpartum metabolic processes appear in each case to have stopped the outbreak. I have preferred the diagnosis of erythema multiforme to that of dermatitis herpetiformis on account of the very characteristic appearance of the eruption in the three outbreaks that I have seen.

144 WEST FORTY-EIGHTH STREET.

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## TERATOMA STRUMOSUM THYREOIDEALE OVARI.

BY

FREDERICK PROESCHER, M. D.,

Director of the Pathological Laboratory, Allegheny General Hospital,

AND

JOHN A. RODDY, M. D.,

Pittsburg, Pa.

With thirty-five illustrations.

Pick suggested the name *teratoma strumosum thyreoideale ovarii* to designate teratomata of the ovary which are largely or entirely composed of thyroid gland tissue.

The complex structure of teratomata has made possible expla-

nations concerning their genesis which are clearer and more acceptable than the theories advanced to explain the development of tumors of simple structure, such as sarcoma and carcinoma. Wilms' treatise on these tumors has added more to our knowledge of their origin and classification than any other work; some of his theories are vigorously disputed, nevertheless, his work has established a base from which further investigation will be carried out. He showed the term dermoid, as usually applied to ovarian cysts, is a misnomer arising from an erroneous conception of their structure: that they are not, as a rule, simple ectodermal formations, but complicated teratomata; he called them embryomata.

Teratomata are tumors that develop from portions of the germ-plates which by some accident, during embryonal life, were detached from their normal position and lodged elsewhere.

These congenital rests may occur in any part of the body, but are most frequently found in the ovary and usually do not develop until adult life. The blastomere theory is now generally accepted in preference to the fertilized-pole body theory.

According to Wilms, the great majority of teratomata develop from portions of all three germ-plates, ectoderm, mesoderm, and endoderm; there are a few rare exceptions to this rule, teratomata developed from only one or two germ-plates. Wilms, Saxer, Pick, Nauwerk, and Hanseemann have reported teratomata developed from only two germ-plates; such tumors are called bidermome. Those developed from only one germ-plate are the rabdomyomata, enchondromata of the testicles (Wilms), and the adenocystomata of the ovaries (Hanau and Kappeler).

A teratoma may contain or consist of only one, several, or all the organs which may be developed from the germ-plate or plates represented in the congenital rest from which it grows. The simplest teratoma recorded only showed the development of a single tooth (Saxer), the highest and most complicated forms are fetal inclusions and monstrosities.

In this paper we will confine our attention to one class of teratomata, those occurring in the ovary and containing thyroid gland tissue; they are by no means of unusual occurrence but have been studied less than any other members of the group, which is the reason many are not recognized.

To Katsudura(2) is due the credit of first directing attention to the study of teratomata containing thyroid tissue. In 1901 a meager account of his case was published. Pick,(3) in 1901,

reported having found thyroid gland tissue seven times in a series of twenty-one dermoid cysts. Since then cases have been reported by Walthard(6), Lanz(7), Gottschalk(1), Kretschmar(8), Anspach(16), Glockner(4), Eversmann(12), Robert Meyer(5), Lecène(9), Polano(10), Ribbert(11), K. Ulesko-Stroganova(13), R. H. Bell(14), J. H. Swanton(15), Vagedes(18), and R. T. Frank(19). We have three more cases to add.

Teratoma strumosum thyreoideale ovarii usually occur in women past forty years of age, who have born children. They may grow either slow or rapidly and do not give rise to symp-



FIG. 1.

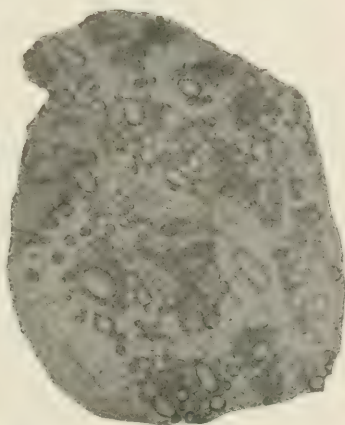


FIG. 2.

Gottschalk's case. Table I. Archiv für Gynaekologie, 1899.

FIG. 1.—Gross specimen.

FIG. 2.—Microscopical section, showing numerous follicles filled with colloid mass.

toms nor physical signs until they become so large that adjacent structures are displaced or compressed. Constipation, retention of urine, ascites, prolapse of the vagina, and abdominal uneasiness are usually the first signs of their presence. These tumors rarely become malignant, and after removal recovery is the rule. Their size varies, and in most cases depends upon the length of time intervening between the beginning of development and removal. Pfannenstiel classes them as malignant on account of the possibility that they may reach such a size as to mechanically kill.

The majority of those so far reported were about the size

of a child's head at birth, some were smaller, and a few were as large as a man's head. They are round or oval, occasionally regular in outline, more frequently their surfaces are studded with pea- to walnut-sized cysts. Some have the same structure and consistency throughout, others are partly cystic. When removed they are found to have a pedicle and are partly covered with peritoneum which was derived from the adnexa uteri. They are covered with a fibrous tissue capsule which varies in thickness, containing blood- and lymph-vessels. Strands of

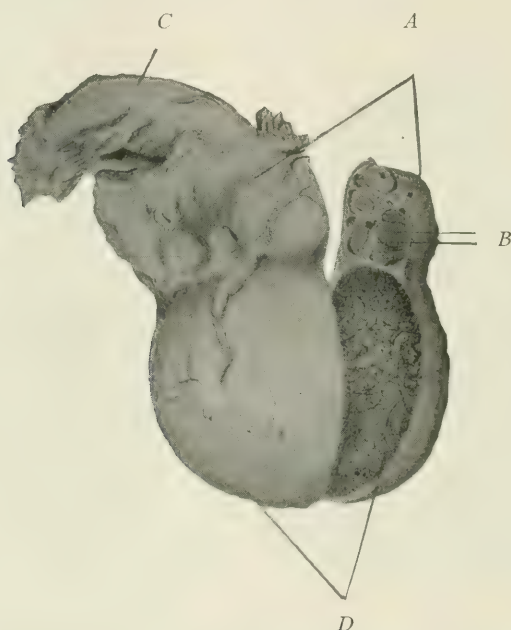


FIG. 3.—Katsurada's case. Ziegler's Beiträge, 1901, p. 180, case 4. Gross specimen. A. Remnant of the ovary. B. Thyroid-tissue cyst filled with colloid. C. Part of the tube. D. Dermoid cyst.

this capsule dip down into the glandular portions of the tumor forming a connective-tissue network. If the capsule is ruptured or incised over a solid portion of the tumor, a gray, yellow, or brownish colloid mass exudes. Incision through the capsule over a cystic portion is followed by the escape of a thin, clear fluid which is slightly heavier than water and varies in color in different cases, from pale yellow to a brownish-red. Inspection of the inner surface of the capsule after the fluid has escaped, shows irregular projections of fibrous tissue, remnants of the walls of small cysts which coalesced to form a single large one.

Microscopically teratoma strumosum thyreoideale ovarii closely resembles normal thyroid tissue, some areas vary, and occasionally other formations are seen resembling struma hyperplastica or colloides, but the thyroid picture always predominates and the similarity is strong. It is composed of irregu-

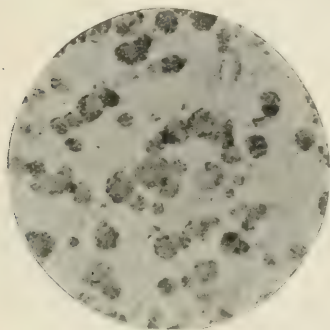


FIG. 4.

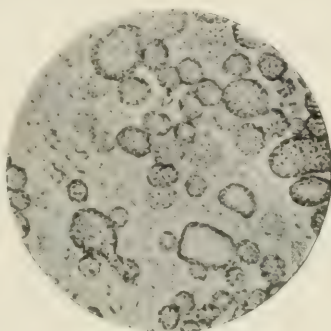


FIG. 5.

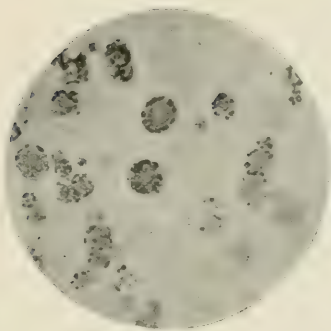


FIG. 6.

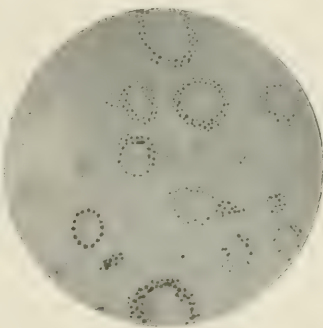


FIG. 7.

One of L. Pick's cases in comparison with Gottschalk's case. Berliner  
Klinische Wochenschrift, 1902, No. 26, pp. 618-621.

FIG. 4.—Microscopical section showing struma thyreoidea hyperplastica. Solid, round, nonliquefied follicle.

FIG. 5.—Photograph of Gottschalk's drawing, showing the so-called "Folliculum Malignum Ovarii." Solid, round, plasmodial ground bodies.

FIG. 6.—Microscopical section, showing struma thyreoidea hyperplastica formation of solid thyroid vesicles with central colloid degeneration.

FIG. 7.—Photograph of Gottschalk's second drawing, showing the so-called "Folliculum Malignum Ovarii," Table X, Fig. 4. Formation of solid ground bodies and central cystic degeneration.

lar round or oval, variable-sized vesicles separated by connective tissue. These vesicles are lined with a single layer of epithelial cells, usually cuboid, occasionally columnar. They contain a colloid substance which is sometimes very granular in appearance and in places contains fragments of epithelial cells.

Vesicle multiplication can be seen throughout the mass. All stages of development, from a single cord of cuboid epithelial cells to secreting vesicles, are observed, also the stages of degeneration of vesicle into cyst. Besides the occurrence of short cords consisting of a single row of cuboid cells we see several parallel rows of cells lying side by side, some of which show beginning canalization; they are lined by a single layer of cuboid or cylindrical cells. The mature vesicles may be seen undergoing degeneration into cysts, the occurrence of a great many of these

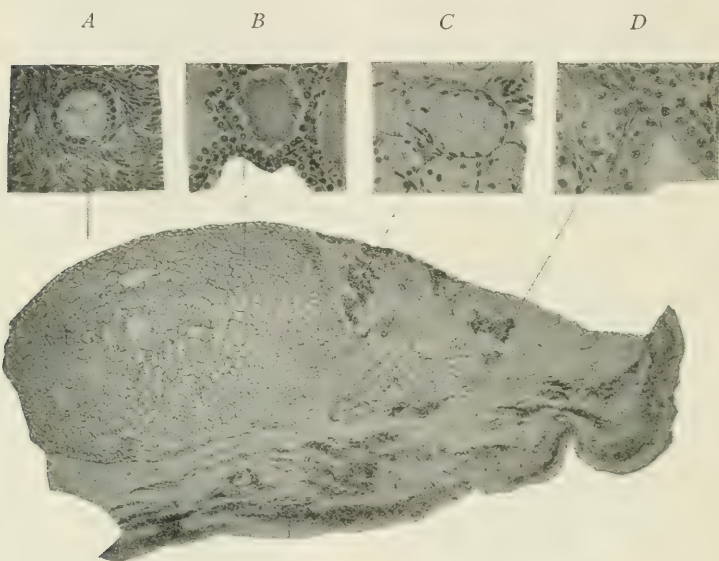


FIG. 8.—Anspach's case. (University of Pennsylvania Medical Bulletin, 1903.) Section through dermoid prominence. A. Primordial follicle, in ovarian stroma. B. Struma colloid. C. Mucous glands. D. Sebaceous glands.

small cysts together gives the appearance of a multilocular cyst. In time, the thin connective-tissue walls separating, they gradually disappear, converting this multilocular group into a large monolocular cyst.

Some of the reported cases show deviations from the above description: Gottschalk's case\* showed hemorrhagic areas. Some vesicles in Glockner's cases were filled with darkly stained colloid in which were points of calcification, and a formation resembling a sweat-gland was seen. One of R. Meyer's cases contained several small bone formations and a small portion

\*Gottschalk described a tumor in 1899 which he called "folliculoma maglinum;" that tumor was a teratoma strumosum thyreoidale ovarii.

of voluntary muscle tissue. Stroganowa's contained several cysts whose walls were calcified and hard as bone, inside those cysts there was nothing but a yellowish necrotic mass. Lecène's Case I contained a salivary gland formation; Case II, in addition to thyroid tissue, contained strands of hair, salivary gland, and an area of carcinomatous degenerated skin. Polano's was the smallest formation of this kind reported, it was a pyramid-shaped formation of thyroid tissue measuring  $1\frac{1}{2}$  cm. from base to apex, and occurred in an ovary which was the size of a child's fist; it was sharply outlined from the ovarian tissue and showed

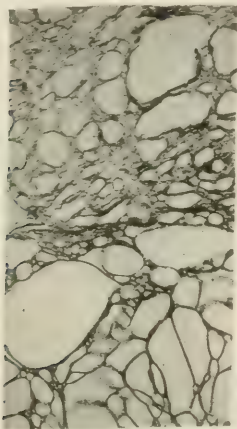


FIG. 9.

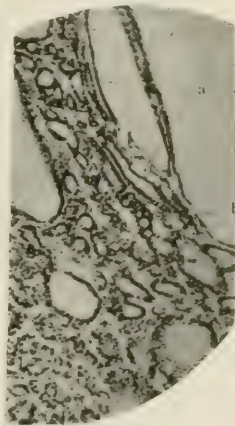


FIG. 10.

FIGS. 9 and 10.—Robert Meyer's case. Virchow's Archiv, 1903, p. 538. Microphotographs, showing various stages in the development of follicles containing colloid.

plainly its dark red color outlining it from the grayish-white ovary tissue; its base was at the periphery of the organ. The chart will aid in comparing the reported cases.

We have observed three of these interesting tumors. Two of them were removed in the Mercy Hospital, Pittsburg, by Drs. Werder and Weiss, and one in the Allegheny General Hospital by Dr. Simpson. To those gentlemen we are indebted for the privilege of examining the tumors and for the histories and clinical data that accompanied them.

CASE I.—A woman thirty-six years old had been married for two years and was sterile. She had always enjoyed good health until a few months after marriage, then her menses became irregular. Some months later they ceased, and she noticed her

abdomen enlarging and suspected pregnancy. Three weeks after first noticing the enlargement of her abdomen she had an

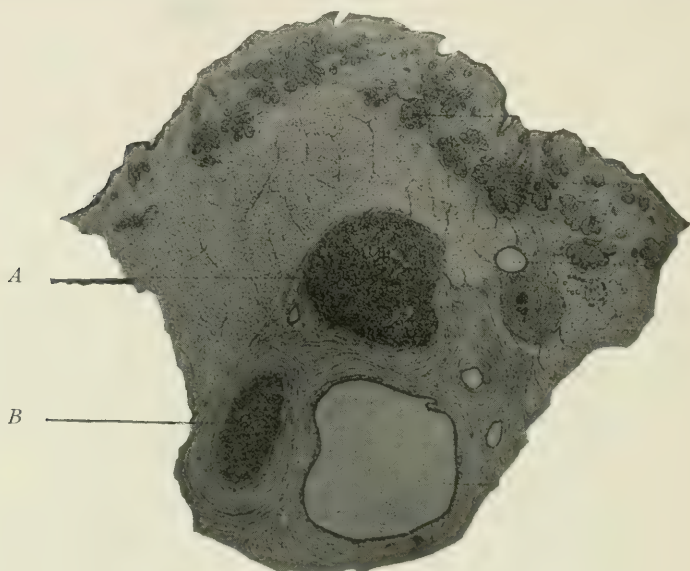


FIG. 11.

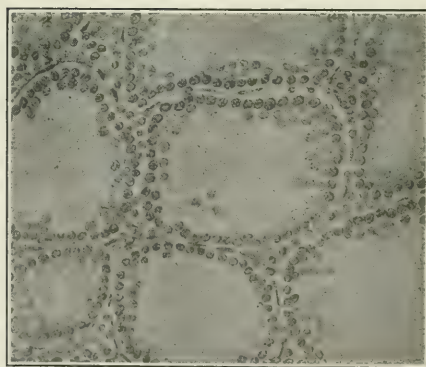


FIG. 12.

Lecène's case. *Annales de Gynaekologie et Obst.* Paris, 1904.

FIG. 11.—Low magnification. A. Showing thyroid tissue. B. Salivary glands.

FIG. 12.—High magnification. Showing follicles filled with colloid.

attack of peritonitis, which subsided. Six months later she was admitted to hospital having the appearance of one eight months' pregnant. On admission her breasts, lungs, heart, liver, and

kidneys were found normal, a tumor was palpated in the lower left portion of the abdomen, and her legs were edematous.

A laparotomy was performed and an oval tumor, covered with adhesions and attached to the adnexa uteri of the left side removed. An exstrophy of the right side normal.

*Macroscopic Appearance.*—The upper half of the tumor was cystic and fluctuated, the lower half was solid. It measured 21x25x18 cm., and weighed 1,800 grams. The left ovary had disappeared, the broad ligament was very thin and elongated, the tube and fimbria were well preserved.

When the capsule was incised over the upper cystic portion 500 c.c. of a thick grayish fluid flowed out. On longitudinal section the capsule was found to vary in thickness from 2 to 5 mm., it was composed of dense fibrous tissue having a smooth outer

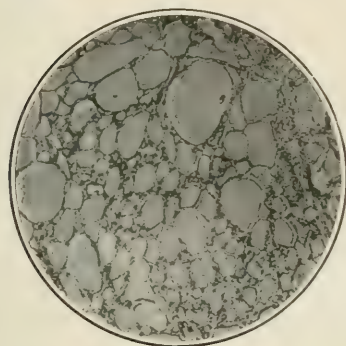


FIG. 13.



FIG. 14.

R. H. Bell's cases. British Journal of Obstetrics and Gynecology, 1905.

FIG. 13.—Section under low power, from case occurring in 1902.

FIG. 14.—Small portion under high power to show flat, cubical epithelium.

surface. The portion which contained the fluid was lined with a rough, grayish, granular colloid mass 0.5 cm. thick which could be separated from the capsule. The lower half of the tumor which was solid contained small round cysts; below them there was a homogeneous colloid mass varying in color, some places being grayish, others yellow, amber, and brownish.

*Microscopical Examination.*—The capsule consists of fibrous connective tissue, in most places poor in nuclei and not very well supplied with blood- and lymph-vessels. Sections show the encapsulated mass to be made up of a framework of connective tissue undergoing hyaline degeneration in which are innumerable various-sized and shaped vesicles, most of them outlined by a single layer, some by several layers of cuboid, occasionally cylindrical, epithelial cells. These cells contain large nuclei having a fine chromatin network, and a comparatively small amount of cloudy protoplasm; the borderlines between

## REPORTED CASES OF TERATOMA STRUMOSUM THYREOIDEALE OVARIJ.

Reported by	Patient's age	Size of tumor	Condition of opposite ovary	Ascites	Goitre	Malignant or benign	Tissue other than thyroid present	Postoperative history
Gottschalk .. 1899	Multipara; 48	10 x 8 x 3.5 2.8 kg.	Slightly enlarged	Ascites	No.	Benign	None	Complete recovery
Katsurada .. 1901	.....	22 mm. x 6 mm.	.....	.....	.....	Benign	Skin, sebaceous matter, hair, etc.	Unknown
Pick .....	Seven cases	Neither macro	scopic appearance	nor clinical	data	Benign	Skin, hair, etc.	Unknown
Ansputh .....	36	Goose egg	.....	.....	.....	Benign	Hair and spicule of bone, etc.	Unknown
Glockner .....	57	8 x 6 x 5 cm.	Normal	.....	No.	Benign	Small calcified areas, cartilage, sweat glands.	Unknown
R. Meyer .....	Multipara; 55	1.5 Man's fist	Small, atrophied.	Ascites	No.	Benign	Small amount of bone and muscle formation	Complete recovery
Walshard .....	Multipara; 55	11.5 x 7 x 6.5 cm.	.....	.....	Symmetrically enlarged thyroid gland	Benign	Skin, sebaceous and sweat glands	Complete recovery
Walshard .....	33	6 x 3 x 2.5 cm.	.....	.....	No.	Benign	Squamous epithelium, cartilage	Complete recovery
Walshard .....	(?)	13.5 x 7 x 8.6 cm.	Normal	.....	Enlarged thyroid gland, calcareous nodules	Benign	None	Complete recovery
Lanz (1903).	Neither macroscopic appearance	.....	nor clinical	data given	.....	.....	None	.....
Kretschmar .. 1904	Multipara; 48	12.5 x 8 x 5.6 cm.	Normal	.....	.....	Benign (?)	Calcified areas, bone, and hemorrhage	Died two years after operation, heart failure (?)
Lecène .....	.....	Man's head	Normal	.....	.....	Benign	Hair and sebaceous matter, carcinomatous degeneration of the skin	Complete recovery
Lecène .....	Woman; 40	Man's fist	O (?)	.....	.....	Benign	Hair, squamous epithelium of skin, sebaceous matter, salivary gland	Complete recovery

## REPORTED CASES OF TERATOMA STRUMOSUM THYREOIDEALE OVARI.—Continued.

Reported by	Patient's age	Size of tumor	Condition of opposite ovary	Ascites	Goitre	Malignant or benign	Tissue other than thyroid present	Postoperative history
Polano 1904	Multipara; 56	Child's fist.	Normal	Ascites	No	Benign	None	Unknown
Ribbert 1904	Neither mae	rosopic appea	rance nor clinical	data given			None	
Eversman 1905	33	Child's head.	Normal		No	Benign	None	Complete recovery
K. Ulesko Stroganova 1905	Multipara; 54	Child's head.	Beginning tera- toma stru- m thyroi- deale ovari	Ascites	No	Benign	Some vesicles had cal- cified walls	Complete recovery
R. H. Bell 1905	Multipara; 32	Level of um- bilicus	Small cyst right ovary		No	Benign	None	Complete recovery
R. H. Bell 1905	No children	Tumor ex- tended above um- bilicus	Normal	Enlarged, es- pecially on right side		Benign	Calcified spots not mi- croscopically examined	Complete recovery
Sevanton 1907	Multipara; 42		(?)	(?)		Benign	None	Unknown
Werder Proescher Rothly 1909	Case I 36	21 x 25 x 18 1800 gr.	Normal		No	Malignant	Carcinomatous areas	Died from recurrence probably two years after operation
Weiss Proescher Rothly 1909	Multipara; 26 Case II	23 x 16 x 9 2500 gr.	Normal		No	Benign	Osteoid areas	Alive and well two years and after
Simpson Proescher Rothly 1909	Multipara; 37 Case III	4.5 x 3 x 2.5 80 gr.	Enlarged nodular		No	Malignant		Died in less than one year after operation
R. T. Frank 1909	22	Peach		No	No	Benign	Bony shell molar tooth.	Complete recovery
Vagelle 1903	(?)	Child's fist.				Benign		Recovery. Well five years later

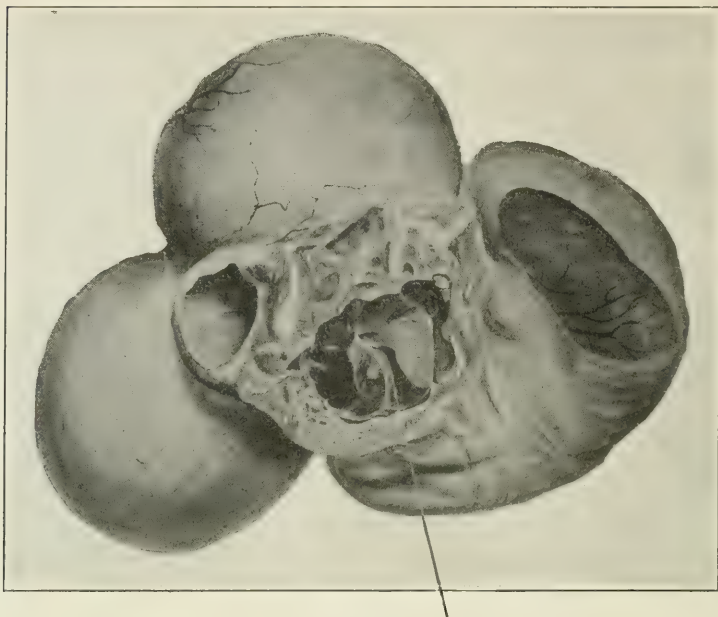


FIG. 15.

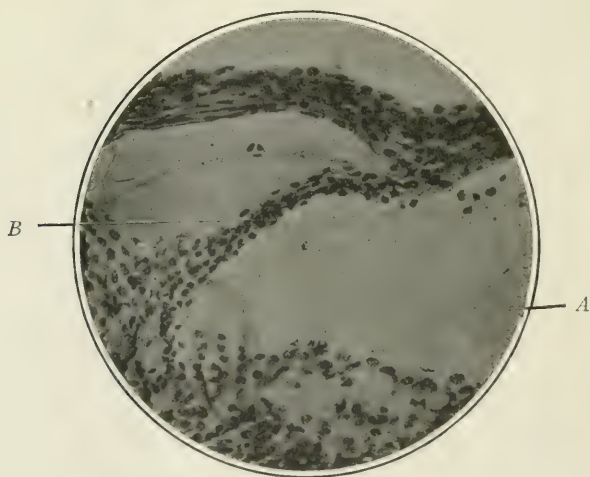


FIG. 16.

J. H. Swanton's case. Brit. Gyne. Journal, 1907, p. 244.

FIG. 15.—Gross specimen.

FIG. 16.—Microscopical section. Zeiss, ocular 2; objective DD. A. Colloid material, showing ghost cells with spaces occupied by fat crystals. B. Septum between acini, showing cubical cells with nuclei.

cells are very faint, often indistinguishable, giving a syncytial appearance. The epithelium lies directly on the connective tissue. The epithelial covering is partially smooth, partially corrugated, and partially in the form of papilla. The largest part of the epithelial lining of the monstrous alveoli is in a state of beginning necrosis.

According to their contents, and the processes going on within them, these vesicles may be divided into two groups: 1. those containing a clear, homogeneous colloid which they secreted, and



FIG. 17.—CASE I. Werder-Proescher-Roddy. Photograph of gross specimen. A. Carcinomatous degeneration. B. Wall of evacuated cyst.

2. those containing a granular colloid in which are many fragments of disintegrating cells undergoing colloid degeneration.

At some places in the connective-tissue framework, instead of vesicles there are solid groups of cuboid and irregular shaped epithelial cells, some of them are arranged in rosettes, others in parallel rows, of three, four, or five, lying close together. In the center of each of these groups colloid degeneration is taking place, the first step in the formation of a new vesicle. New vesicles are also seen being formed by a process of budding from already mature vesicles.

Besides the round and oval alveoli there are labyrinthine tubal formations lined by one or more rows of cuboid epithelium, some show a small lumen, others are filled with colloid and

desquamated epithelium. The protoplasm of the epithelial cells is undergoing colloid degeneration; they contain large drops of colloid which push the nuclei toward the periphery: some cells from which the colloid has escaped show vacuoles. The nuclei of these cells are round or oval and have a chromatin network.

In most of these formations the outer part of the tubules are formed by the epithelial cells, there being no *membrana propria*; in a few isolated places there is a thin layer of fibrous connective tissue between the tubules, parts of which present a sarcomatous appearance.

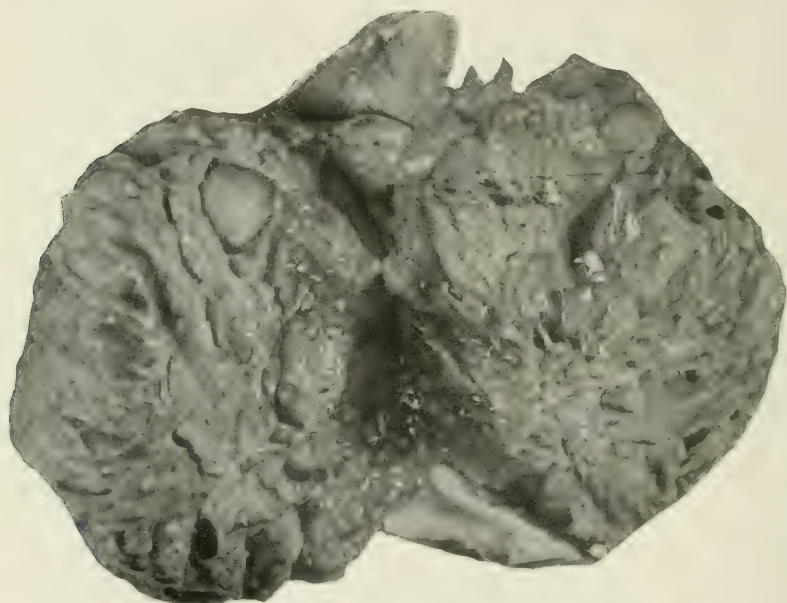


FIG. 18.—CASE II. Weiss-Proescher-Roddy. Gross specimen. Showing large cyst, filled with colloid mass.

CASE II.—Woman twenty-six years old, borne two children. Always enjoyed good health until seven months before admission to hospital. First symptom was irregular menstruation; later bearing down sensation in pelvis. Two month's before admission she first noticed abdomen enlarging. On admission patient was in a weak and exhausted condition; heart, lungs, liver, and kidneys normal, uterus retroflexed, large tumor palpated in the region of appendix.

After opening the abdomen a large tumor of the right ovary was removed. It was attached to the tube, had no peritoneal covering. *Macroscopic appearance:* Oval; tumor measured 16 x 23 x 9 cm. and weighed 2,500 grams. When cut it was found to have a fibrous tissue capsule 3 mm. thick. This oval tumor was divided into two cysts, the upper, attached to the

B

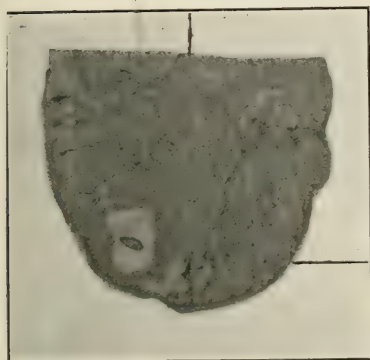


FIG. 19.

B

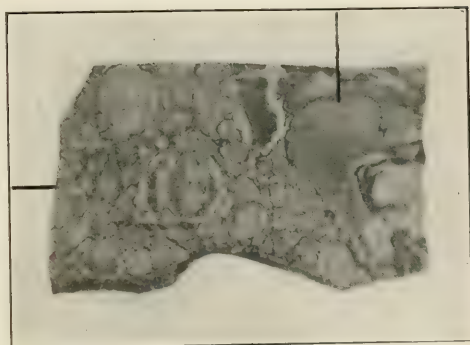


FIG. 20.



FIG. 21.

Microscopical sections, about three times enlarged.

FIG. 19.—Tumor. Werder-Proescher-Roddy. Showing connective-tissue capsule. Tumor mass, consisting of large and small follicles filled with colloid. Follicles are separated by connective-tissue stroma.

FIG. 20.—Tumor. Weiss-Proescher-Roddy. A. Showing large and small cysts filled with colloid, separated by connective-tissue stroma. B. Osteoid substance.

FIG. 21.—Tumor. Simpson-Proescher-Roddy. Showing tumor mass divided by connective-tissue stroma in two large locules which contain numerous small follicles, partly filled with colloid.

tube, when opened was found to contain a thick light gray fluid, two cysts about 7 cm. in diameter, and one about 3 cm. in diameter; these three cysts contained colloid.

The cyst forming the lower portion of the tumor measured 18 x 6 x 8 cm. and contained alveoli arranged in straight rows which radiate like the ribs of an open fan, they vary in size the average diameter being 3 cm. Some of the alveoli are filled with a transparent grayish colloid, others with an opaque brownish colloid, a few contain bone-like pale yellow masses hard to cut with the knife.

In the wall of the upper cyst there are remnants of the ovary.

*Microscopical Examination.*—Capsule is composed of hyaline degenerated fibrous connective tissue, poorly supplied with blood and lymph-vessels and containing few nuclei. The connective tissue dividing the tumor lobules is well supplied with blood- and lymph-vessels, and is rich in nuclei. In places deep-stained endothelium is seen upon its surface.

The intralocular masses are made up of a fine connective-tissue network containing innumerable irregular-sized round and oval vesicles lined with a single layer of cuboid or cylindrical epithelial cells which have large round or elongated oval, basal staining nuclei. The most of these cells have very indistinct outlines, others show no borderlines and appear as a band of pink protoplasm containing a row of nuclei. Vacuoles are seen in many cells marking the escape of drops of colloid. The epithelial cells lining the vesicles have no membrana propria, they rest directly on the connective tissue. Some alveoli are filled with a bluish granular colloid in which are fragments of disintegrated epithelial cells, undergoing colloid degeneration. Others contain a clear, homogeneous, pink colloid mass. There are areas in which alveoli can be seen forming and multiplying; in such places the connective tissue is especially rich in nuclei.

The interalveolar connective tissue is well vascularized and contains some large blood- and lymph-vessels; numbers of the lymph-vessels are partly filled with colloid.

Scattered through the tumor are many small areas of osteoid tissue, none of them show calcification. They consist of homogeneous and fine linear striated masses, stained red, containing numerous well-formed bone-corpuscles.

Attached to the inner surface of the capsule is a small remnant of the right ovary showing marked cirrhosis and a few corpora albicantia, but no follicles.

CASE III.—Woman thirty-seven years old, had several children. Always in good health until six months before admission to hospital, then she began to lose weight and strength, and developed symptoms and signs indicative of pelvic tumor. Her abdomen was opened and an ovarian tumor was found on the left side attached to the tube; the right ovary was enlarged and showed pathologic changes, but, owing to the patient's poor physical condition, was not removed.

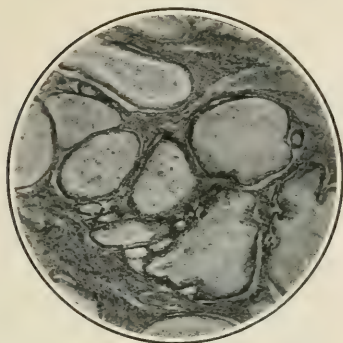


FIG. 22.

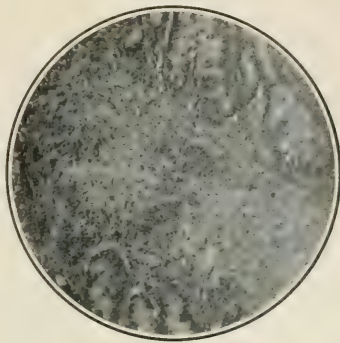


FIG. 23.

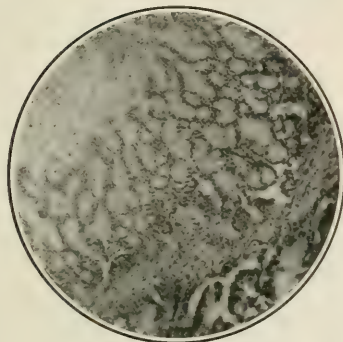


FIG. 24.

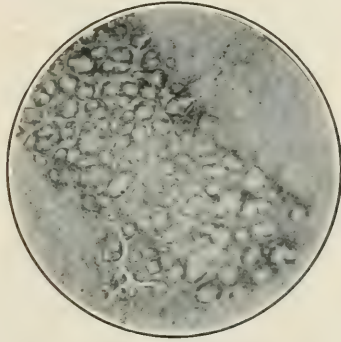


FIG. 25.

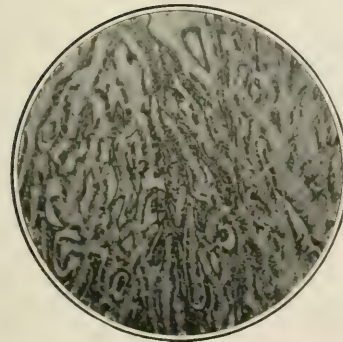


FIG. 26.

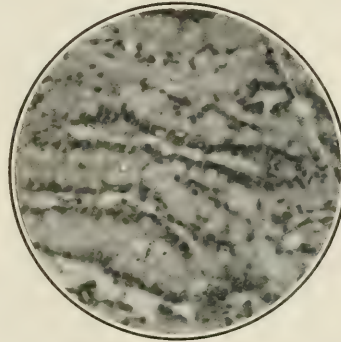


FIG. 27.

Microscopical section from tumor No. 1. Werder-Proescher-Roddy.

FIG. 22.—Zeiss. Oc. 4. Obj. 16 mm. Showing large cysts filled with colloid and outlined with cubic epithelial cells surrounded by connective-tissue stroma.

FIG. 23.—Zeiss. Oc. 4. Obj. 8 mm. Showing the development of solid, round, nonliquefied vesicles out of a ground substance consisting of round and spindle cells.

FIG. 24.—Zeiss. Oc. 4. Obj. 8 mm. Showing many small follicles and beginning formation of a large cyst.

FIG. 25.—Zeiss. Oc. 4. Obj. 8 mm. Showing an isolated group of vesicles of adenomatous type.

FIG. 26.—Zeiss. Oc. 4. Obj. 16 mm. Showing carcinomatous degeneration of follicles in form of an adeno-carcinoma (labyrinth-like tubules).

FIG. 27.—Zeiss. Oc. 4. Obj. 4 mm. Same section as Fig. 5, only higher power showing tubules outlined with a colloid degenerated cubic epithelial cells.

*Macroscopic Appearance.*—After fixation in formalin,  $4\frac{1}{2} \times 3 \times 2\frac{1}{2}$  cm., 80 grams weight, oval semisolid encapsulated tumor surrounded by a connective-tissue capsule 2 mm. thick, strands of which dip down into the tumor dividing it into small lobules; it was a grayish color, and with a reading glass a great many pin-head-sized alveoli could be seen.

*Microscopic Examination.*—Capsule: The greater part consists of well-vascularized connective tissue rich in nuclei, and occasional spindle-shaped and epithelioid cells. Some sections are infiltrated with deep-stained round cells, in some places more numerous than in others. Parts of the capsule contain vessels whose walls consist of only one or two layers of long spindle-shaped endothelial cells. Such vessels are distended with blood. Lymph-

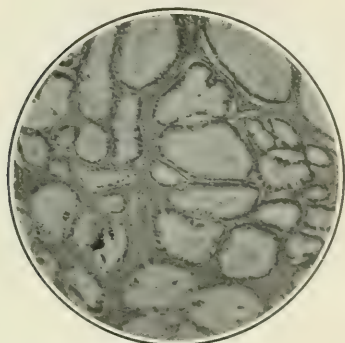


FIG. 28.

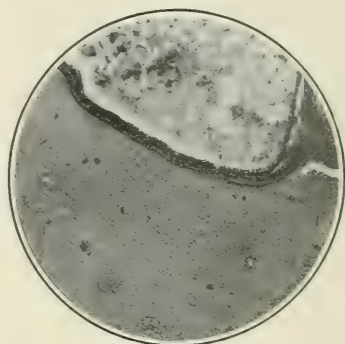


FIG. 29.

Microscopical section, Case II. Weiss-Proescher-Roddy.

FIG. 28.—Zeiss. Oc. 4. Obj. 16 mm. Showing large cysts filled with colloid and outlined with cubic epithelial cells surrounded by connective-tissue stroma.

FIG. 29.—Zeiss. Oc. 4. Obj. 16 mm. Showing large area of osteoid tissue with well developed bone corpuscles.

vessels are seen in all sections of the capsule, many of them containing colloid.

The encapsulated mass consists of a strongly developed connective-tissue network in which are vesicles filled with colloid, also cords and nests of epithelial cells. The connective-tissue network varies in different parts of the tumor: in one place it consists of closely lying fibers extremely rich in nuclei, having a sarcomatous appearance, in another part epithelioid cells having round or oval nuclei in which a few chromatin granules are seen, in a third place it resembles embryonal connective tissue, myomatous type, and some of it shows hyaline degeneration. Areas of round-cell infiltration and large and small hemorrhages occur here and there in the connective tissue. It contains many blood-vessels exactly the same as those of the capsule. In a few places there are small, corkscrew-like, thick-walled, partly

hyaline degenerated vessels, some of which are occluded. In the vicinity of such vessels many corpora albicantia, remnants of the ovary, are seen. Lymph-vessels are not as numerous as in the capsules, they contain colloid.

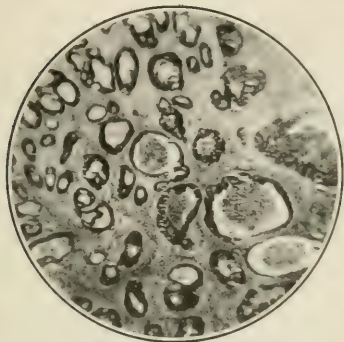


FIG. 30.

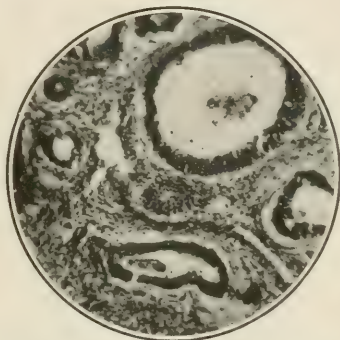


FIG. 31.

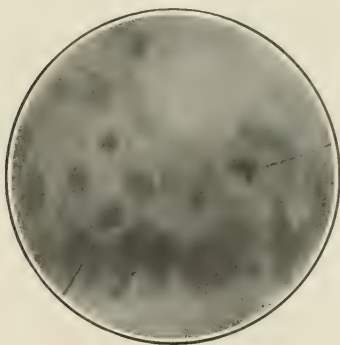


FIG. 32.

Case III. Simpson-Proescher-Roddy. Microscopical sections.  
Primary growth.

FIG. 30.—Leitz. Oc. 4. Obj. 1. Showing various-sized vesicles filled with a granular colloid mass and outlined with a multiple layer of irregular-shaped epithelial cells. The follicles surrounded by a strongly developed connective-tissue stroma.

FIG. 31.—Leitz. Oc. 4. Obj. 4. Showing vesicles by higher power with a multiple layer of irregular-shaped epithelial cells and in the center a solid, non-liquefied, newly formed vesicle.

FIG. 32.—Leitz. Oc. 2.  $\frac{1}{2}$  oil immersion. Showing epithelial cells with hyperchromatic mitotic figures.

The vesicles are exactly like those seen in Cases I and II before described, except that they are outlined with a multiple layer of irregular-shaped epithelial cells; they contain many atypical hyperchromatic mitotic figures.

Five months after removal of the tumor the patient returned

to the hospital suffering from a recurrence. When her abdomen was opened, the right ovary was seen to have enlarged and there were many nodules in the mesentery and liver, one was removed for examination and the abdomen closed. The bean-sized solid metastatic growth removed from the omentum has the same appearance as the primary tumor except that the connective tissue is less in amount and contains relatively fewer cells; the colloid is a very pale pink, and there are present many mononuclear sessile-formed eosinophiles.

The distinction of being the first to clearly describe and properly classify teratoma strumosum thyreoideale ovarii undoubtedly



FIG. 33.

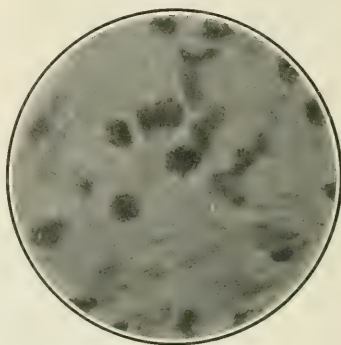


FIG. 34.

Microscopical sections. Case III. Simpson-Proescher-Roddy.  
Metastatic growth from the mesentery.

FIG. 33.—Leitz. Oc. 4. Obj. 1. Showing various-sized cysts, partly colloid degenerated, partly solid, surrounded by a strong connective-tissue stroma. The large follicles are outlined by a multiple layer of irregular-shaped epithelial cells. Follicles are filled with colloid and disintegrated epithelial cells. Above the two large cysts in the center is a newly formed follicle with beginning colloid degeneration in center.

FIG. 34.—Leitz. Oc. 4.  $\frac{1}{12}$  oil immersion. Showing eosinophiles in the connective-tissue stroma.

belongs to Pick. The claims of Gottschalk and Kretschmar to priority are untenable.

In his communications, prior to the appearance of Pick's critic, Gottschalk occasionally referred to his tumor as "Similar to struma malignum," which is certainly not a phrase one would use to convey the idea that it contained thyroid tissue; the term "Struma malignum" is vague and does not convey a correct idea of the pathologic anatomy presented by an ovarian tumor composed of thyroid tissue.

Kretschmar's first report of his case was read before the

Gynecological Congress at Giessen, two years before Pick's original article was published; at that time Kretschmar made no reference to any similarity to thyroid tissue observed in his tumor and his statements show he did not suspect any.

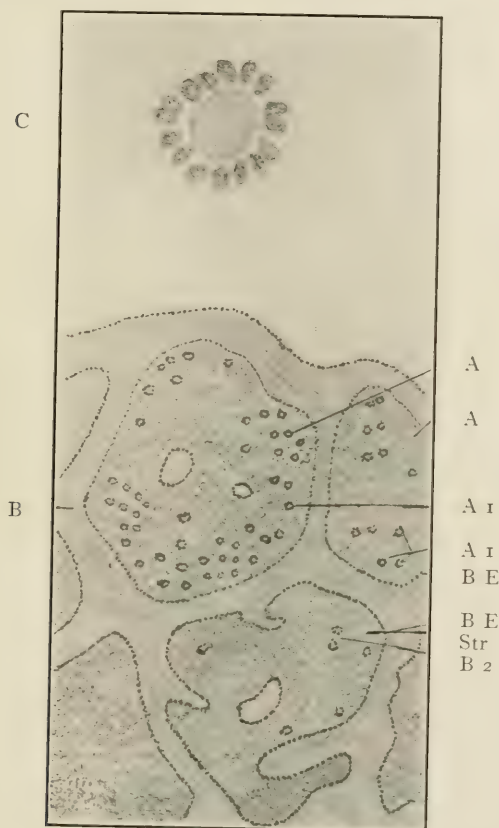


FIG. 35.—Schroeder's case of "Folliculum malignum ovarii," drawing (Fig. 5).

- Fig. 2
- |       |                           |    |                               |
|-------|---------------------------|----|-------------------------------|
| A.    | Alveole.                  | C. | Protoplasma disk, high power. |
| Str.  | Stroma.                   |    |                               |
| B. E. | Basal epithelium.         |    |                               |
| A. 1. | Protoplasma disks.        |    |                               |
| B. 1. | Connective-tissue stroma. |    |                               |
| B. 2. |                           |    |                               |

Archiv für Gynaekologie, Bd. 64, Tafel 8, Fig 5.

After reading Pick's paper, Kretschmar wrote an article in which he stated he believed Pick was right in that the tumor removed by him was a struma thyreoideale ovarii; but wrong in classifying it as a teratoma, it being a metastatic growth

resulting from the lodgment in the ovary of emboli carried from the thyroid by the blood stream.

Since the appearance of Pick's critic, Gottschalk has written another paper on the subject, contradicting himself a number of times. In his latest communication he refutes Pick's diagnosis and declares his original one, "folliculum malignum," correct. He further states that his tumor developed from the wall of a primitive follicle and shows a strong similarity to so-called folliculum. Pick has shown this idea untenable, and Gottschalk has never offered any direct proof.

Because he found the smallest locules in the periphery of his tumor, Gottschalk concludes it developed from the periphery of the ovary, disregarding the fact that the same formation is observed in all cystic tumors. The formation occurs in accord with laws of physics, the pressure at the periphery being less than at the center, and has nothing to do with a special morphology.

He identified the "grundtypen," which are globular follicle-like bodies, as follicles which after reaching a certain size liquefy in the center and become outlined with a single layer of cubic epithelium. In his first paper he states that growth is exclusively from the periphery outward, by a number of plasmoidal buddings. In another paper he states growth is from the periphery in toward the center. He says these follicles do not possess a tunica or theca, explaining it as "heteroplasia," but does not say what the "heteroplasia" is.

Let us now consider how primitive follicles develop and appear: The growth of a primitive follicle never shows budding, its growth is always regular throughout the periphery, and in every case forms a theca. Ovarian egg-cells exclusively have the character of primitive follicles; nothing similar to them can be seen in any of Gottschalk's grundtypes. He identifies the central liquefaction as liquor follicularis, which is another unwarranted deduction; central liquefaction is observed in all glandular cystic tumors, therefore its presence in this case does not show any relation to primitive follicles.

The occurrence of plasmoidal formations indicates nothing as they are occasionally seen in other structures where they should not appear. Sternberg has shown that these plasmoidal formations are artefacts, due to fixation (formalin?).

Gottschalk states that some malignant epithelial tumors of the ovary, especially carcinoma, occasionally show follicular

structure to a certain degree; but they are entirely different from his. Such tumors have been observed by V. Kahlden, V. Mengershausen, Pozzi, Beaussenat, and Schroeder (17). Recently Lönnberg, in Pick's laboratory, has made a careful study of them. Schroeder's carcinoma contained alveolar formations surrounded by epithelium which showed no similarity to Gottschalk's "grundtypen." Pick and Lönnberg named such tumors "folliculoid carcinoma" or "ovarian carcinoma with folliculoid tissue type." Compare the drawing of Schroeder's (see Fig. 35) with the photograph of Gottschalk's tumor. No similarity is seen.

Viewed from the present status, it is highly improbable that ovarian tumors ever develop from the epithelium of primitive follicles. The evidence submitted by Pick and others conclusively shows the tumor described by Gottschalk as "folliculum malignum" to be a struma thyreoideale hyperplastica. Kretschmar believed his tumor was an endothelioma; if so classified it would be an endothelioma of adenomatous type.

At a glance an adenomatous endothelioma looks like thyroid tissue, but on careful examination of serial sections it is seen that every vesicle in an adenomatous endothelioma has a canal in its center, which is not the case in thyroid tissue. The cells of an endothelioma have sharp, distinct borderlines, while the cells of thyroid tissue have faint or indistinguishable borderlines. Every section of an adenomatous endothelioma shows lymph tubules with open canals. Nothing similar is seen in thyroid tissue.

When Kretschmar reported his case, no teratoma strumosum thyreoideale ovarii had been observed which contained other tissue, such as hair, salivary glands, and bone, so he was led to believe the growth was a metastatic one, and in support of his theory stated that its growth was slow, whereas teratoma grow rapidly.

Since the appearance of Pick's critic, Kretschmar admits his tumor was a struma thyreoideale ovarii, but still claims it was not a teratoma, but a metastatic growth.

All those investigators whose cases are tabulated in this article, except Gottschalk, now agree that the tumors herein referred to were composed of thyroid tissue, but they are divided in opinion as to the origin of these growths.

There are three possibilities as to their origin:

*First.*—They may result from embryonal displacement of aberrant blastomeres.

*Second.*—A. They may be caused by emboli carried from a normal thyroid gland to the ovary by the blood.

B. They may be caused by emboli carried from a struma hyperplastica or struma colloides by the blood.

The first is the most probable origin and is strongly supported by the findings in nearly all cases. Pick and the majority of observers adhere to this theory, but some, as Kretschmar, hold to the metastatic origin.

The following facts are all against the probability of metastatic and in favor of the embryonal origin.

1. Single metastatic growths are very rare. 2. Nearly all tumors characterized by metastasis are malignant, and, if treated as these cases were, would cause death soon after operation, while the mortality in these cases is only 20 per cent. or less. 3. Most metastatic deposits from thyroid gland tumors occur in the bones and not in the ovaries; of all the cases of teratoma strumosum thyreoideale ovarii not one showed any evidence of bone involvement. 4. When Kretschmar denied the embryonal origin of these tumors he enumerated a number of conditions which he stated a tumor must fulfill to be looked upon as a teratoma; since that time a number of ovarian tumors consisting of thyroid tissue have been reported which fulfilled all of Kretschmar's requirements.

Ribbert believes the idea that teratoma must develop from three germ-plates is correct, but that in practice it is usually impossible to discover evidence of origin from all the germ-plates, even when present, because to do so the tumor must be cut in serial sections which is a very lengthy procedure that can only be performed in a few cases.\*

Those cystomas of the ovaries that contain mucous secreting epithelium, gland formations similar to those found in the intestines and tissue which resembles intestinal wall, Ribbert states cannot be developed from ovarian tissue, but are of embryonic origin.

Why abnormal thyroid tissue develops in the ovary is not yet known. Kretschmar thinks it may be due to the same cause as goitre. Opposed to this is the fact that teratoma strumosum thyreoideale ovarii have not been found more frequently in goitre regions than in other regions. We believe the cause

\* Waltherd only cut and examined serial sections of three teratoma strumosum thyreoideale ovarii; in two of them he discovered tissue formed from all the germ plates, but in one he could not.

must be looked for in some other direction. An interesting physiological question is whether or not this tissue functionates the same as normal thyroid gland. It can be determined by feeding it to animals, which has not yet been done.

These tumors have been looked upon by some as malignant and by others as benign; most of the reported cases have been classified as malignant. If we exclude the cases of Katsurada, Pick, and Lecène on account of the small amount of thyroid tissue found in them (they were all complete recoveries), there are twenty-two cases left, all of which showed a large amount of thyroid tissue; of these twenty-two cases the postoperative history of seventeen is known, five unknown. One patient died within a year after operation and two died in less than two years after operation. One of these fatal cases (Kretchmar) was suffering with a heart lesion which probably was the cause of death, but a postmortem examination was not made. If in Kretchmar's case death was not due to the tumor, the mortality is about 10 per cent.; included as a fatality caused by the growth, the mortality is 13.5 per cent.; in either case the mortality is not so great as that of carcinoma or sarcoma, but less than is generally conceived.

A careful study of the reported cases shows that most of them are undoubtedly benign and that some are certainly malignant. We believe the malignant can be distinguished from the benign by the difference in their microscopic appearance.

All these tumors having the same appearance as our Case II, which closely resembled normal thyroid gland tissue, showing only a single layer of epithelial cells in the vesicles, were benign; these similar to our Cases I and III, in which vesicles containing several layers of irregular epithelial cells, many mitotic figures or areas identical in appearance to adenocarcinoma, were malignant.

#### BIBLIOGRAPHY.

1. Gottschalk. Ein neuer Typus einer kleincystischen bösartigen Eierstockgeschwulst; *Archiv für Gynäkologie*, 1899, Bd. lix, page 676. Ueber das Folliculum malignum ovarii; *Berl. klin. Wochenschrift*, No. 26, page 607.
2. Katsurada. Zur Lehre der sogen. Dermoidcysten oder Embryomen des Eierstocks. *Ziegler's Beiträge*, 1901, page 179, Case 4, Fig. 10.
3. L. Pick. Beitrag zur Lehre von den Geschwülsten. Ueber Struma thyreoida ovarii aberrata. *Berl. medicin. Gesel*

schaft. Sitzung vom 23. April, 1902. *Berlin. klin. Wochenschrift*, No. 19, page 442. Discussions: Bemerkungen zu Gottschalk's Vortrag, Ueber das Folliculum malignum ovarii. Berl. med. Gesellschaft. Sitzung vom 11. Juni, 1902, page 618.

4. Glockner. Ueber ein fast ausschließlich aus Schilddrüsengewebe bestehendes Ovarialteratoma. *Centralblatt für Gynäkologie*, 1903.

5. Robert Meyer. Struma Ovarii Colloides. *Virchow's Archiv*, 1903, page 538.

6. Walthard. Ueber Struma Colloides Cystica im Ovarium. *Zeitschrift für Geburtshülfe und Gynäkologie*, 1903, page 567.

7. Lanz. Correspondenzblatt für Schweizer Aerzte, 1902, Bd. xviii.

8. Kretschmar. Ueber Struma ovarii. *Monatschrift für Geburtshülfe und Gynäkologie*, 1904, Bd. xix, pages 389 and 546.

9. Lecène. Sur la presence de tissue thyroïdien dans la paroi des Kystes de l'ovaire. *Annales de gynec. et obst.*, Paris, 1904, Bd. i, 2e Série, page 14.

10. Oscar Polano. Pseudoendometriome des Eierstocks. *Zeitschrift für Geburtshülfe und Gynäkologie*, 1904, Bd. li, page 1.

11. H. Ribbert. *Geschwulstlehre*, 1904, Bonn, page 651.

12. Eversmann. Beitrag zur Lehre von der Struma ovarii colloides. *Archiv für Gynäkologie*, 1905, Bd. lxxvi, page 101.

13. K. Ulesco-Stroganova. Struma ovarii. *Monatschrift für Geburtshülfe und Gynäkologie*, 1905, Bd. xxii, page 503.

14. K. H. Bell. On the Appearance of Thyroid-like Structures in Ovarian Cysts. *British Journal of Obstetrics and Gynecology*, 1905.

15. J. H. Swanton. British Gynecological Society. Meeting held Nov. 8, 1906. *British Gynecological Journal*, 1907, page 244.

16. B. M. Anspach. The Present Conception of Dermoid Cysts of the Ovary, with the Report of a Case of Teratoma Strumosum Thyreoideale Ovarii. *University of Penna. Medical Bulletin*, 1903, page 337.

17. Schroeder. *Archiv für Gynäkologie*, Bd. lxi, Tabelle 8, Fig. 5.

18. Vagedes. *Monatschrift für Geb. u Gyn.*, 1903.

19. R. T. Frank. A Case of Stroma Ovarii. *AMER. JOUR. OF OBST.*, Vol. lx, No. 3, page 433.

## VICARIOUS EPISTAXIS IN THE MENOPAUSE.

BY

DAVID I. MACHT, M. D.,

Assistant in Medicine, Johns Hopkins Hospital; Assistant in Gynecology, Hebrew Hospital,  
Baltimore, Md.

VICARIOUS menstruation is by no means frequent, and of cases occurring in the literature not all can bear close scrutiny. There are, however, some undoubtedly authentic and real cases of vicarious menstruation on record, and of these vicarious epistaxis or nose-bleeding is perhaps the most common. Out of about 200 cases of vicarious hemorrhage collected by Puech,\* he found ten cases of vicarious epistaxis. Most of the cases of such nose-bleeding, however, have occurred in young and vigorous individuals in the prime of sexual life or as a result of acute suppression of the menses.

I have recently had the opportunity of observing, in the Gynecological Clinic of the Hebrew Hospital, a case of vicarious epistaxis at the beginning of the menopause, a case which I think rather rare, and interesting enough to be reported.

*History* No. 5043.—Mrs. A. B., forty years, Russian, married, admitted to the dispensary on August 25, complaining of nose-bleeding, and sent to the throat department. From the throat department, the patient was referred to the medical side, and then transferred to the gynecological department under my care. Patient came complaining of nose-bleeding for many months, and frontal headaches. Examination of the nose revealed a slightly curved septum with bleeding vessels on the left side. Otherwise the throat, eyes, and ears were negative. The bleeding vessels of the nose were cauterized with trichloroacetic acid, and the patient sent to the medical department.

Physical examination of the chest was negative, heart and lungs were found to be in good condition. Abdominal examination was also negative, and, as the patient was complaining of "change of life," she was sent over to me.

On examination I obtained the following gynecological anamnesis:

Patient has been married twenty-four years, and has born nine children, the youngest one being seven years. She had one miscarriage, at six weeks. *Menarche* or first menstruation began at fourteen years. Periods were always regular, every month, and lasted seven days. No dysmenorrhea. After

\* Puech: *De la Déviation des Règles*. Académie des Sciences, 1863; see also M. Fraueillon. *La Puberté*, Thèse, Paris, 1906.

marriage periods continued regular, except for pregnancies, occurring every month and lasting about four days, without pain or leucorrhea. Bowels are habitually constipated. Micturition normal.

About three years ago the menses grew scantier. This continued for two years, until about a year ago menstruation ceased altogether.

Simultaneously with the cessation of the menses, the patient began to have periodic hemorrhages from the nose, occurring regularly every month, "like a clockwork," at the time of the expected period, and accompanied by frontal headaches, and severe flushes of the face. The hemorrhages vary in severity, sometimes being more profuse than at other times, and usually last about a day, when they stop.

It is the nose-bleeding and the hot flushes that brought the patient to the hospital. On examining the patient I found nothing remarkable. Abdomen natural. Liver and spleen not enlarged. No tenderness. On pelvic examination, I found a slightly relaxed vagina; cervix slightly lacerated; uterus slightly enlarged, anteflexed, retroverted, and slightly fixed. Adnexa negative. I diagnosed the case as being one of vicarious epistaxis in the climacterium, and directed the treatment to the same. The cauterization of the nasal mucosa gave the patient considerable relief, as the nose-bleeding is now much less and occurs only as a slight oozing or *show* at the time of the periods.

In this connection, I might mention the excellent results I obtained in this case in treating the hot flushes, vasomotor and other disturbances of the menopause, with *sumbul*. I am at present making clinical experiments with the fluid extract and tincture of the drug in such cases, and have found it very useful.

1511 MADISON AVENUE.

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## THE TREATMENT OF ECLAMPSIA A CENTURY AND A HALF AGO.

BY

F. JULIAN CARROLL, M. D.,

Su. merville, S. C.

THE medical profession has made such vast strides in the last century that we are accustomed to regard anything of a medical nature originating more than ten years ago as obsolete and of no earthly use, save perhaps as an interesting antique. It was with this prepossession in my mind that I recently picked up an old volume bearing the rather imposing title: "A Collection of Preternatural Cases and Observations in Midwifery," by William Smellie, M. D., published in 1772, at a time when our ancestors were spending their time alternately swearing devotion

and allegiance to George III. and arming themselves to resist his authority.

Under the heading: "Women Attacked with Convulsions; the Children Delivered in the Preternatural Way," he relates the following:

CASE I.—"A woman in Clare Market attacked with violent convulsion in the year 1745.

A midwife sent for me in the morning to a patient whom she attended all the foregoing night; who without any accident, was all of a sudden, without any previous warning, thrown into convulsion fits. At first they only returned every two or three hours; but afterwards more frequently. The woman had all along been stupid and senseless.

The midwife told me that the patient was in the beginning of the ninth month of pregnancy; that she formerly delivered her, when she had an easy time, and no such complaint; that the mouth of the womb was a little open; but she had not found anything like labor pains.

Soon after I came, she fell into a fit, during which I examined and found the Os Uteri a little open, and that the convulsion seemed to act with the same kind of effort as a labour pain. As her pulse was full I ordered ten ounces of blood to be taken from her arm, and a binder to be applied to her back. No medicine could be given internally, as she could not swallow any kind of nourishment since the first attack.

In about four hours I was again called, on account of the convulsions recurring more frequent and violent; and found the Os Uteri softer, and much more open. Although, as before observed, there was no appearance of labor, yet the violence of the agitation and straining in times of the fits, might have proved sufficient to deliver the child; but I was afraid it was dangerous to allow the convulsions to go on longer; and was persuaded that a speedy delivery was the only probable method to save the patient as well as the Fœtus.

After informing the friends of the danger and of the necessity of relieving the woman by delivery and having placed the assistants to keep her in position, I with great ease introduced my hand through the Os Uteri, broke the membranes, turned the child, and delivered it by the feet.

The child was alive and the mother had not another fit after the delivery; but she remained stupid and senseless for three days, then became gradually more and more sensible, and would not believe for some time that she had been delivered."

CASE II.—A woman nearly in the same condition as the former, but lost, from delaying the delivery too long.

The same, or the following year, I was called to a poor woman near the Seven Dials; and was told by the midwife that the patient was come to full term, that the labour was just begun, and at every pain she was thrown into a violent fit.

The pains were not frequent, she was sensible between the fits, the Os Uteri was a little open, and the head of the child presented. As her pulse was quick, I ordered twelve ounces of blood to be taken from her arm, and a large blister to be applied to her back, betwixt the shoulders; a clyster was also administered which gave her a plentiful passage.

This was in the morning, and I desired the midwife to send for me if the fits did not abate, or returned with greater violence. In about two hours, they again sent for me; but being then engaged with one of my own patients, I sent one of my oldest pupils and desired him, if the convulsions returned, to deliver the woman immediately.

At first he found the patient in a dosing or comatose way; but soon after she was attacked with a violent convulsion fit: he told her friends that it was absolutely necessary to deliver immediately, and that I had recommended this method to save her life, which was in imminent danger: the midwife was of the same opinion; but the husband and sister would not consent, or allow him to do anything until I could come to his assistance.

On my arrival in the evening, I found that the woman was in a comatose state, and now quite insensible; the fits more frequent, with tremors and Subsult. Tend. On this I told the friends the uncertainty of saving her, and was sorry to find that they had prevented the gentleman from assisting her before it was too late.

They now begged that I would do all I could to save the woman and allowed me to send for some more of my pupils: the gentleman who was with her in my absence told me that the convulsions had dilated the Os Uteri a little every time; however, it being her first child, it required some force and time before I could stretch it so as to place my hand into the uterus: this being effected, and having broke through the membranes, I brought down the legs, and delivered the child; but have forgot whether it was alive or dead. This case was not so fortunate as the former, although the placenta came easily along, and the Uterine discharge was sufficient; yet the convulsions were not restrained; but became more frequent and violent, carrying her off in two hours after delivery.

CASE III.—A woman in labor of her first child, near Oxford market, attacked with convulsions after the membranes were broke.

In the year 1746, I was sent for by a midwife, who told me that her patient's labour had gone on exceedingly well until the waters came off; but soon after that happened, she was attacked with strong convulsions, which went off; and returned every time when a labour pain began to come on.

The Os Uteri was sufficiently dilated. The head of the Fœtus presented at the brim of the pelvis. The woman's pulse was very quick, and her face uncommonly florid: on which account twelve ounces of blood were taken from the arm. But finding

this avail nothing, and the convulsions growing more frequent and violent, and head not advancing in the least, I thought it most expedient in this uncommon case, to deliver by turning the Fœtus; which I easily performed, as the waters were not all discharged from the Uterus.

The child was alive and the woman had not another fit after delivery.

CASE IV.—Another case of the same kind; the child presenting with the face, and was delivered in the preternatural way.

In the year 1749, a young woman come to her full time, was taken with violent convulsions when she fell in labour; for which she was immediately bled, and a clyster was given, which had the desired effect. Nervous medicines and opiates were also administered; the last to allay the pains that seemed to bring on the fits; for every time a labour pain came on, she was thrown into convulsions. The Os Uteri was open about the breadth of a crown piece and a hard unequal substance presenting, at first made it uncertain what part of the child presented. She was ordered to drink plentifully of weak green tea, and barley water with Sal. Nitri, sweetened with syrup of Althea. In about three hours after this prescription the os uteri was much more dilated, and on examining, I found that the forehead and eyes of the child presented; the violence of the fits had abated after the bleeding and the opiate; but were now grown stronger and more frequent.

In these dangerous circumstances, dangerous both from the convulsions and bad presentation of the child's head, I thought it was wrong to delay the delivery any longer. All present being made sensible to her situation, I had the patient kept firm in bed in a supine position, and gradually dilated the parts; which required time, and a good deal of force; but as the waters were all gone, I could not alter the position of the child's head; on which, and not without a good deal of force also, I brought down the child's feet, and delivered, though not without greater fatigue than I expected. The child was alive, and as in the former case, the woman had not any more fits after the delivery. She soon fell into a sound sleep and recovered.

When I first introduced my hand into the uterus and found strongly contracted to the body of the child, I knew it would require great force to turn it; supposing that the wrong presentation prevented the head from coming along, I made the trial to turn down the Vertex; but that failing I delivered in the preternatural way.

Three mothers and three children saved out of four is certainly not a bad record in this dread puerperal eclampsia, and it certainly reflects no little credit on this obstetrician of the eighteenth century that in four cases of version he saved three and possibly all of the children.

Can we offer any better results or suggest any better line of

treatment to-day than that advocated and successfully put into practice by Dr. Smellie over one hundred and fifty years ago?

So it seems it sometimes does us a little good to take a peep into these old and forgotten books. There are other pieces of information contained in this same work, equally important and equally interesting. It might repay you to hunt them up.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting held at the Woman's Hospital, January 11, 1910.*

*The President, R. L. DICKINSON, M. D., presiding.*

IN accordance with the program adopted at a previous meeting, the scientific session was exclusively clinical. A number of patients who had been operated upon at the Woman's Hospital, by Dr. J. Riddle Goffe and Dr. Dougal Bissell, from one to six years previously, were presented to illustrate the end-results. The two operating-rooms were utilized simultaneously, Dr. Goffe operating in one and Dr. LeRoy Broun in the other. Dr. Goffe demonstrated the technic of his operation for procidentia uteri, complicated by cystocele and rectocele.

The patient gave the following history: Forty-one years of age, married twenty years, and a mother of five children, the last being seven years of age. Her symptoms were those usually attending the condition announced. Upon examination a laceration of the perineum of the second degree with rectocele presented, also a well-marked cystocele. The uterus was large, retroverted, and firmly bound posteriorly by adhesions, the cervix presenting just inside the vulva. As the cervix was large, hard, and nodular, due to an extensive bilateral laceration, and the fundus large and hard, suggestive of fibroid degeneration, a hysterectomy was decided upon.

The operation was begun by Dr. Goffe, and was proceeded with in accordance with the following description: Both lips of the cervix were grasped by a strong traction forceps and firmly dragged upon, a self-retaining posterior retractor or speculum having first been inserted into the vagina. A transverse incision was then made posterior to the cervix and Douglas' pouch opened. Here firm adhesions were encountered between the rectum and the uterus, reaching to the top of the fundus. By the use of considerable force and persistent effort these were separated and the uterus set free. The vaginal incision was then extended around the entire cervix, and the bladder dissected

from the uterus up to the peritoneal reflection. In accomplishing this a nice point in the technic was demonstrated, which consisted in working in first from one side and then the other toward the median line by dull dissection underneath the uterovesical ligament, till the handle of the scalpel could be passed through between the ligament and the uterus. This brings the ligament distinctly into view and it is readily cut. The importance of this step resides in the fact that as soon as the ligament is cut away the operator is sure that he is down upon the uterus and, in dissecting off the bladder throughout the remainder of its attachment, he is in no danger of his finger riding up on top of the ligament and being forced into the bladder. The ligament was then cut away and the dissection proceeded with by simply pushing the bladder off of the uterus.

The edge of the transverse incision anterior to the cervix was grasped either side of the median line by two artery clamps and the bladder stripped off the anterior vaginal wall throughout its entire extent reaching well out onto the fascia lata and up to the base of the urethra. This was easily and quickly accomplished by a dull instrument called a spud, an invention of Dr. Goffe. Everyone was impressed by the promptness and facility with which this was accomplished. No hemorrhage demanding attention was occasioned by this procedure. The clamps were then removed, and the vaginal flaps were allowed to swing free.

No clamps were used upon the broad ligaments, but a No. 2 plain catgut suture was used, double, to ligate the broad ligaments. A Deschamp needle being used, a continuous suture was applied to each broad ligament, beginning at the base and reaching up nearly to the ovarian arteries. The broad ligaments were cut away successively as fast as the ligature was tied. The ends of the ligatures were left long and hanging to an artery clamp.

The reflection of the peritoneum between the uterus and the bladder was then broken through by the finger, and freely torn across. By grasping the round ligament between the index finger, which was carried posterior to it, and the thumb in front, the fundus was drawn into the vagina, the cervix meantime being carried back into the hollow of the sacrum and freed from the volsellum. This maneuver was facilitated by the previous section of the anterior vaginal wall without which it would have been impossible owing to the size of the uterus. Beginning at the free border of the broad ligament, a continuous suture was applied and continued down until it met the ligature previously applied from below up, the ligament being cut away with each succeeding stitch, first one side and then the other. The ovaries and tubes, being free from disease, were not interfered with.

The next step consisted in stitching together the broad ligaments from either side across the pelvis. This was accomplished in the following manner: The bladder, being elevated upon a trowel, brought into view the broad ligaments, allowing each round ligament on the proximal side of the ligature to be grasped

by an artery clamp and brought out into the median line. These were then stitched together with a continuous suture of linen thread from the round ligaments down. The suture being passed in such a manner that the peritoneal surfaces were brought into contact, the ligatures and stumps being turned posteriorly. The object of this was to afford a smooth peritoneal surface upon which to spread out and stitch the base of the bladder. Three separate sutures of forty-day chromic gut No. 2 were passed, catching up the tissues of the broad ligament—one in the median line catching the round ligament and one, two inches to the right, and another to the left of this, penetrating both walls of the broad ligaments. Each needle was left attached to its suture as passed, and allowed to hang out of the vagina. These sutures were then passed through the base of the bladder beginning with the middle one and the others in succession and then tied. The points in the base of the bladder through which they were passed were selected as follows: By repeated trials a point in the middle line of the base of the bladder was caught in an artery clamp and carried up to the point of insertion of the middle suture, which when held there would cause the base of the bladder to take a straight line from the base of the urethra to the suture point in the broad ligament. Through this point the middle suture was then passed and tied. Points were then selected about one and one-half inch to the right and left of this median point and at equal distances from the base of the urethra, and through them the other sutures were passed and tied. This spread out the base of the bladder on the face of the broad ligaments and held it fixed in position. The anterior vaginal wall with its fascia was then cut away either side of the median incision sufficiently to draw the fascia lata taut under the base of the bladder. Interrupted sutures were applied through the vaginal wall and fascia, thus closing the anterior incision, the last one being carried through the broad ligaments just underneath the attachment of the bladder.

The principle involved in this operation for the relief of cystocele is that it employs nature's plan of suspending organs from above by ligaments, rather than by supports from below. The spreading of the base of the bladder and fixing it there also follows nature's scheme, for the base of the bladder physiologically takes no part in the contraction or the expansion of the bladder as it empties and fills. Since the complete development of this operation it has given entirely satisfactory and permanent results.

The perineum was then repaired for the relief of the rectocele, a narrow strip of gauze passed into the culdesac, the vagina firmly packed with gauze, and the operation was complete.

The operator explained that this procedure was followed by no unpleasant symptoms referable to the bladder. As a rule, the patients voided urine naturally after twenty-four or thirty-six hours, and were out of bed at the end of two weeks.

*Meeting of February 8, 1910.*

*The President, R. L. DICKINSON, M. D., in the Chair.*

Dr. GEORGE GRAY WARD, JR., presented the specimen and reported a case of

PAPILLARY CYST ADENOMA OF THE OVARY: INJURY TO THE URETER  
WITH IMPLANTATION INTO FUNDUS OF THE BLADDER.

Miss C. S. was referred to me by Dr. Kast in November, 1908, suffering from an abdominal growth. She was forty-eight years of age and had reached the menopause, her last menstruation having occurred nine months previously.

Her weight was about 100 pounds, she had a very sallow, muddy complexion, was markedly emaciated, and gave every appearance of cachexia. She had been a sufferer for years from digestive disturbances and had been sent to Dr. Kast for her gastric symptoms. Since her menopause she had been losing strength and weight, and her digestive disturbances and constipation were much increased. She also complained of some abdominal pain. Examination disclosed a nodular growth in the lower abdomen about the size of a six months' pregnancy. The uterus was very small and pushed out of the pelvis and to the right, and the growth was firmly imbedded in the true pelvis which it practically filled.

I operated upon the patient in the Woman's Hospital on December 3, 1908, in the presence of Dr. Grad, of this Society, and several others. On opening the abdomen, free greenish fluid was present and the tissues appeared bile-stained, and some papillomatous masses were found on the peritoneum.

The growth was extensively adherent and was intraligamentous in development. It was enucleated with considerable difficulty, the uterus and appendages and as much of the broad ligament as possible were removed. It was found that the left ureter had been involved in the lower pole of the growth between the layers of the broad ligament, and that, in making traction upon the mass, the ureter had been drawn up and severed in cutting the tumor free.

As it was not possible to find the distal end of the ureter, and as the proximal end could be made to reach the lateral wall of the bladder, the best procedure was to make a ureterovesical implantation.

The method employed was that of Payne, of Norfolk, which has been described by him in the *Journal of the American Medical Association*, for October 17, 1908, and which I show you here, the accompanying illustrations of the method making it very clear. The end of the ureter was split up on two sides forming separate flaps which were sutured to the inside of the bladder wall with through-and-through sutures, and the margin of the bladder opening was sutured to the periphery of the ureter. A cigarette drain was passed from the site of the anastomosis

into the vagina and the whole field of the grafting was covered over with the flaps of the broad ligament, making it extraperitoneal. A sound was passed into the bladder through the urethra to act as a guide and to facilitate the operation. A self-retaining catheter was used to prevent distention of the bladder. The patient made an excellent recovery, being out of bed on the fourteenth day. A slight leakage of urine through the vagina was observed several days after the operation when the drain was removed, which I attributed to there being perhaps a little too much tension on the ureter or to the drain having become adherent to the ureter and the union being interfered with when it was removed. In a few days this leakage became lessened and was entirely stopped several weeks after the operation and has given no trouble since.

The pathological report showed the tumor to be a malignant papillary cyst adenoma of the ovary.

The patient gained in weight and health until last December, when she had a bloody vaginal discharge and began to lose weight and strength. A sinus was found in the vaginal vault from which material was curetted and which the pathologist reports as carcinoma of an adenomatous type.

The methods of making the implantation of a ureter are the common methods of uniting the severed end flush with the bladder wall, mucosa to mucosa, which is prone to stenosis through subsequent contraction; the Van Hook method of splitting the ureter on one side and flaring the end, and thus uniting the ureter into the bladder; and the oblique method as first advocated by Witzel, which is an attempt to imitate the natural implantation of the ureter. This latter method has in its favor the fact that it is stronger than the others just mentioned and therefore is preferable if there is any degree of traction on the ureter. However, some operators claim that it is liable to contraction with resulting stenosis.

The method of Payne, which I employed in this case, has also the advantage of being very strong owing to the flap sutures penetrating the entire vesical wall, and, according to Payne, leaves a more patent ureter than the other methods. But one of its most important advantages is the avoidance of the necessity of any instrument in the bladder to draw down and hold the ureter in place while the anastomosis is being made, as the flap sutures, which are very easy to place, act as tractors and draw the ureter firmly into position when they are tied, enabling the operator to finish the suturing without difficulty.

Payne reports two cases in which he has used this method with satisfactory results. He states that firm union takes place between the external connective-tissue coat of the ureter and the mucosa of the bladder, but that if there is any fear of failure of union on the part of the operator, he can easily resect a little of the mucous membrane on each side of the bladder incision.

Payne reports that he has been able to find seventy-seven

cases of ureterovesical implantation reported in the literature up to the time of his writing (October, 1908).

There must be many cases that have not been reported.

#### DISCUSSION.

DR. GRAD.—I was present when Dr. Ward operated on this case. It seems to me that this method is very practical, that is to say, if you can bring the ureter anywhere within reach of the bladder you are sure of making a good, thorough anastomosis. I have tried it in one case where, during a hysterectomy for carcinoma, the ureter was injured. Six months later I implanted the ureter into the bladder by the method Dr. Ward has described, with a good result. If the ureter happens to be a little short one can gain a little distance by liberating the bladder from its bed, so I think this method of implantation is a very practical one and a very good union can be obtained as a result of such a method.

In Dr. Ward's case the operation was unusually difficult, because there was some tension on the ureter.

DR. H. D. FURNISS.—In operations requiring dissection close to the ureter or where the ureter is abnormally placed, it is well to take precautions against such an accident and to render it easily recognized should such an accident occur. Passing a bougie or catheter renders the recognition easy. Some time ago I advocated the injection of methylene-blue or indigo-carmin before operation, so that injuries of the ureter could be more easily detected (escape of colored urine). The first ureter I catheterized was subsequently cut by accident; it was repaired on the catheter, and no trouble followed.

In the last year I have seen three cases of implanted ureters, the one just reported by Dr. Ward, one by Boldt, and a case operated by myself. In Dr. Boldt's case both ureters can be plainly seen. On the right side the ureteric orifice looks much like the orifice of an old sinus with its bit of granulation tissue; from this side I was unable to see any urine escape. (Later, both ureters were catheterized, and both kidneys found to be functioning properly. On the left side the catheter passed an obstruction just beyond the ureteric orifice; this was followed by a steady stream, until two drams were collected. After this the flow was intermittent, as is usual.)

My case was first seen as one of supposed incontinence. A ureterovaginal fistula was found. This was repaired by a plastic operation turning the ureter into the bladder. Six months after the operation no evidence of urinary flow was seen from the implanted ureter.

In many of these cases of implanted ureter there is subsequent contraction of the new ureteric orifice, with atrophy of the kidney, unaccompanied by hydronephrosis.

Recently in cystoscopy Dr. Boldt's case I noted that the old ureteric orifices appeared smaller than usual, that there were

no movements of these orifices, and that they remained open for some time after the introduction of a catheter (lack of tone).

DR. WARD.—It occurred to me just as Dr. Furniss has said that we might not know for certain whether the kidney is functioning or not. This particular case I cystoscoped in my office. I was not able to find the implantation. Later on, I had Dr. Furniss cystoscope her and it was a question whether we found anything, although with the water cystoscope we thought we found something. We know that if we put a ligature around the ureter that nothing very terrible happens in many cases. The kidney atrophies and goes out of business and the patient goes ahead with the other kidney. There may not be necessarily a great disturbance. Therefore, perhaps in some of these implantations, we may have obstruction and kidney atrophy. I am not absolutely positive that that kidney is functioning. The patient is passing a normal quantity of urine and is perfectly well.

DR. DICKINSON.—Would not these be just the cases for color test?

DR. FURNISS.—I used the color test in the case of Dr. Boldt's, but I hurt the woman so much I was not able to use it again. I used the color test in the case from Plainfield and there I was not able to find any evidence of ureteral flow at all.

DR. BRETTAUER.—What hurt the woman?

DR. FURNISS.—I injected a 4-per-cent. indigo-carmin solution into the buttock and that gave much pain for four days.

DR. HOWARD C. TAYLOR reported a case of

#### FIBROMA UTERI. PREGNANCY. MYOMECTOMY.

This patient was admitted to my service at the Roosevelt Hospital in July, 1909. She was thirty-two years of age, had been married for two years, and had never previously been pregnant. She menstruated regularly every twenty-eight days for five days moderately in amount. The last menstruation was on March 23, 1909. On examination the uterus was found to be increased to the size of a four months' pregnancy and in front and to the left of it a soft mass about five inches in diameter. The diagnosis was made of an ovarian cyst associated with pregnancy. It is my opinion that an ovarian cyst can be removed during pregnancy with little danger of an abortion and, further, that the danger of trouble from the cyst either from twisting during the pregnancy or from direct injury during confinement is considerable and therefore I advised an operation. The abdomen was opened in the middle line by a six-inch incision. The tumor was found to be a soft fibromyoma of the uterus about six inches in diameter and was removed. The bed of the tumor was about four inches in diameter and was closed with interrupted sutures partly of plain catgut and partly chromicized. For twenty-four hours after the operation, the

patient had some contracting pains, but none of importance, and made a smooth recovery.

Dr. Ward, the resident physician of the Sloane Maternity Hospital, said that she was delivered with high forceps on January 26, 1910, of a child which weighed nine pounds and one ounce. The membranes ruptured early in her confinement and she had a marked degree of uterine inertia, the uterus not showing any efficient contractions. The patient did nicely while at the Sloane Maternity Hospital.

#### DISCUSSION.

DR. BOLDT.—I would say with regard to myomectomies during pregnancy that, so far as my observation is concerned, if only the most necessary manipulation is done to the uterus, I believe the operation is not only justifiable but indicated in some instances, and also that then, with proper care, there is not as much danger of a premature delivery or miscarriage as we were formerly led to believe.

DR. GOFFE.—The technic of refraining from manipulation of the uterus in these cases is most important. To my mind it is the element of success in the procedure. I recall two cases I have had in the last few years. A woman at the seventh month of pregnancy, with a large pedunculated tumor growing from the right side of the uterus, came to me with symptoms of obstruction of the bowels. A coil of intestine had become incarcerated between the steadily enlarging fundus and the tumor near its pedicle. I operated, removing the tumor, and releasing the intestine. She went on to full term without any trouble whatever. Another case. A woman came to me from St. John's, Newfoundland. Her physician had discovered at the eighth month that she had a fibroid tumor about the size of a baseball, growing on the anterior lip underneath the bladder. I operated through the vagina, very easily reaching the tumor and removing it. I sent her home in two weeks. She had only been home five days when the baby was born without any difficulty.

I have now at the Woman's Hospital a woman pregnant four and a half months upon whom I operated two weeks ago last Friday, on a diagnosis of fibroid of the uterus complicating pregnancy. It proved, however, to be a dermoid cyst. Of course, that is another matter. I merely speak of it in this connection, as a tumor complicating pregnancy. She is getting along very nicely.

DR. BRETTAUER.—Dr. Taylor started to operate on this woman with the intention of removing an ovarian cyst, which is a progressive growth and ought to be removed at any time. As for fibroids during pregnancy, it has been my experience that they very little interfere with pregnancy. Of course, there are instances where fibroids actually prevent natural childbirth. The child simply cannot pass the large fibroid which blocks

the way. I have two cases in mind at present where I removed such fibroids and confined the woman at term afterward, but, as a rule, I would be in favor of not operating upon a woman who is pregnant and who has fibroids, if no strict indication is present.

That the pregnant uterus can be handled to a great extent without being the worse for it, I have proved only a short time ago when I had to operate upon a woman five months pregnant who had an acute appendicitis with perforation and gangrene, where I found the necrotic right ovary in the abscess cavity with a big fetal concretion. One of the abscess walls was formed by the pregnant uterus. The uterus was covered with a plastic exudation and the abscess was very deep. In looking for the appendix the uterus had to be held back by the assistant for some time and with considerable force. The woman did not miscarry.

DR. WYLIE.—It is a fact if a woman becomes pregnant and has a fibroid, and she passes the second month, unless the fibroid is too large, she does pretty well. As a rule, no operation is needed: it depends on whether the growth of the fibroid obstructs circulation. It is well to recognize that fibroids that do not change the circulation will not, as a rule, interfere with the pregnancy. I have seen the pregnant uterus imbedded between three and four fibroids and have seen the woman do pretty well.

In one case in Bellevue, when she came in, we found the uterus a mass of fibroids, and the child of three or four months was between the fibroids. The most important thing is not to assume that they are going to interfere with pregnancy. That is, discovering the woman with fibroids, if she is married, it is the doctor's duty to put her in condition to become pregnant. Often by curetting you can put that woman in condition so that she can become pregnant and will have a child.

I had a remarkable case in Brooklyn not long ago. She was a doctor's wife between three and four months pregnant. I think some of the other doctors had seen it and they thought it was impossible for her to have a baby. Two of the gentlemen decided it would be better to remove the child. I saw her and made up my mind if those fibroids had much to do with the uterus the pregnancy would not have gone so far. There were two or three as big as small lemons and others you could feel quite easily of less size. I undertook to watch that woman and deliver her of a healthy child near enough to full term for the child to live. I delivered her of a child of nearly nine pounds and perfectly healthy. I then treated her to secure rapid involution and advised her to try again. She had the second child about fifteen months afterward. She was at that time forty-five years of age. The children are perfectly well. It shows how remarkably tolerant the uterus is of fibroids. It is perfectly practicable to take cases where the walls of the uterus have fibroids in them, treating the cases when the woman is

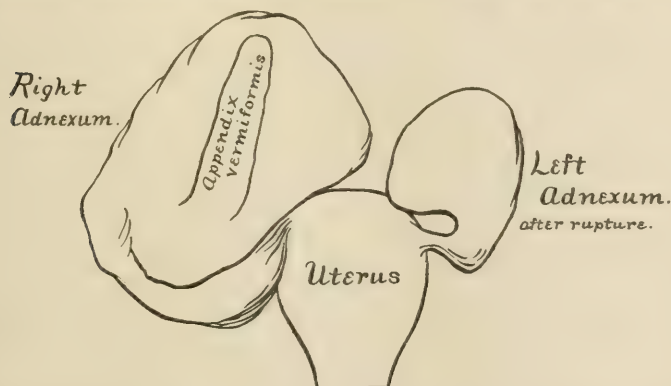
sexually active, and have healthy children. I find fibroids do not always grow. The fibroids in this case were apparently smaller than during the labor. They seemed to grow with the uterus, but afterward shrunk. A long study of fibroids has satisfied me that they, like other organic things, have their youthful growth and their old age, and generally die at the time of the menopause and become more dangerous after that. You can assume, as a rule, that if the woman is pregnant and passes a certain period, the fibroids are not likely to interfere.

DR. DICKINSON.—I know this case, and want to bear witness to a striking instance of judgment confirmed. Here was an elderly primipara having a bunch of fibroids, fist size, growing rather rapidly, which apparently made a circle just at the top of the cervix. The opinion of two Brooklyn men was it was not safe to let her go on. Dr. Wylie believed that they would be lifted out of the way. He delivered her easily. This was one of the borderland cases. It was really a remarkably interesting case.

DR. H. J. BOLDT presented the report of a case of

SUPRA-VAGINAL AMPUTATION OF THE UTERUS WITH THE ADJOINING PYOSALPINGES AND INTIMATELY ADHERENT VERMIFORM APPENDIX.

As a rule, tubo-ovarian abscesses are more taxing on the surgeon, so far as concerns the technic of their removal, than ovarian tumors, or myofibromata of the uterus. In this particular instance the technic was unusually difficult, which may be appreciated when it required nearly an hour before the intestinal adhesions were separated so that the fundus of the



uterus could be felt. On the surface of the pyosalpinx, as may be seen on the specimen, the vermiform appendix was so intimately interwoven with the tubal tumor that it could only with care be distinguished as a separate structure from the tubal tumor. The entire adnexum was tightly adherent to the cavity

of the true pelvis and the intestines, and that it was finally enucleated without rupture must be considered very satisfactory. The left adnexum was ruptured during enucleation, so that it is now only about half of its original size.

It was thought best in this instance to do a radical operation rather than try the almost impossible, a conservative operation, although it might have been possible to retain a small piece of the left ovary; the infection, gonorrheal in character, had played such havoc with the patient's general condition that it is doubtful whether she would be as likely to make as good a recovery with such partial work, as with the intervention done.

The woman, Mary C., is only twenty-seven years old, married five years; never pregnant; very profuse menstruation since the time of her illness, which was of two years' duration. She complained of the usual train of symptoms that women usually have with such pathological changes, only somewhat more exaggerated.

This specimen also illustrates that even had it been previously determined upon to do a radical operation, it could not have been satisfactorily completed per vaginam, as was the case by the abdominal route.

*To be Continued.*

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON OBSTETRICS AND GYNECOLOGY.

*Meeting of December 23, 1909.*

J. O. POLAK, M. D., *in the Chair.*

DR. A. BROTHERS reported two recent

#### CASES OF PELVIC SUPPURATION.

CASE I.—Pelvic suppuration due to tuberculosis. The patient was twenty-three years old, and had been married four years. She had two children, both alive and well. She had never had an operation. She began menstruating at the age of thirteen; her periods were regular, lasted three days, without pain, with a moderate flow; her last menstrual period was two years ago. Two months ago she complained of pain in the right iliac region which was burning in character, and accompanied by frequent and painful urination, and a marked leukorrheal discharge. She had a few attacks of chills and fever. She was treated expectantly with but little relief. One week prior to admission to the hospital the pain in the right iliac region

became worse, the leukorrheal discharge increased, and she had chills and fever and vomiting. On admission there was dyspnea. The leukocytes numbered 16,000 and the polymorphonuclears 85 per cent. A mass was readily palpated in the right iliac region, and rigidity over the right rectus muscle was present; there was also slight tenderness there, and slight pain to the left side. The temperature curve ranged from 98 to 103° F., and the pulse was between 90 and 120. A posterior vaginal section was made on November 23, and half a dram of pus was obtained, not enough however to account for the size of the mass. Subsequently there was rather a profuse purulent discharge which lasted for several days. On December 2, a laparotomy was performed. Dense and numerous adhesions between the omentum, intestines, and adnexa were encountered. The omentum and peritoneum were found to be studded with small and numerous tubercles. On December 7 there were 9,000 white cells and 79 per cent. polymorphonuclears. Since the operation the temperature had ranged from 99 to 104. The pathologist reported this to be a case of miliary tuberculosis. Since the operation the patient's condition remained about the same except that there was less pain in the right side.

CASE II.—Pelvic suppuration due to gonorrhea. This patient walked about with temperatures ranging from 101 to 103° F. She was twenty-one years old, married four years, was never pregnant. Her menstruation began at the age of fourteen, was always regular, and she had dysmenorrhea for one day preceding the flow. She had a leukorrheal discharge for the past three years. She was admitted to the hospital November 5, 1909, complaining chiefly of dysmenorrhea, dysuria during the past three months, and sterility. She was a well-developed and nourished woman, without abdominal signs or symptoms, but she had a temperature which ranged from 99° to 101 to 102°, and once to 103° F. The pulse rate was from 90 to 110. Her husband admitted having contracted gonorrhea about three months ago. On November 19 laparotomy was performed. She had a very fat abdominal wall. Both tubes were found to be involved in many adhesions to the parietal walls, intestines, and omentum. The adnexa were enlarged, thickened, and inflamed. A double salpingo-oophorectomy was performed and a ventro-suspension for retroverted adherent uterus. The patient made an uneventful recovery except for a slight subcutaneous suppuration.

#### MYOMECTOMY FOR FIBROIDS OF THE UTERUS COMPLICATING PREGNANCY.

DR. LOUIS J. LADINSKI reported this case. The patient was thirty-one years of age, had been married ten years, and had had no children. She had one abortion two months after her marriage. She had not been pregnant since. She had had no

operation of any kind. After her last menstruation five months ago, she began to spot and complained of slight abdominal pains. About October 20 the pains became more severe, and she was confined to her bed. The doctor who was then called in made a diagnosis of "tumor complicating pregnancy," and advised her removal to the hospital for observation. Two days later this was done, and she remained there three weeks. She grew steadily worse, the abdominal pains became more severe and frequent, the abdomen increased in size and she gradually grew worse from day to day. After two weeks' observation she was anesthetized; when she emerged from its influence she was told that a uterine tumor had been removed. This procedure did not, however, improve her condition, and after another week of expectant treatment she was sent home. On November 28 Dr. Ladinski again saw her in consultation and had her admitted to Beth Israel Hospital. She then complained of abdominal pains, extreme weakness, headache, nausea, and vomiting. She was markedly anemic, almost cachectic. The red cells numbered 2,400,000 and the hemoglobin was 40 per cent. The white cell count was 9,200, small mononuclears 23 per cent. and polynuclears 77 per cent. On palpation of the abdomen there was noted a distinct, hard, irregular mass occupying the lower part, and especially marked on the right side. There was distinct evidence of free fluid in the peritoneal cavity. The uterus was enlarged to about twice its natural size and pushed upward and to the left by the mass.

This case presented unusual clinical features which made the diagnosis exceedingly difficult. However, after considering the various possible diagnoses it was decided that one of two conditions existed, namely, papilloma of an ovary with ascites, or advanced extrauterine pregnancy. Operation was performed on December 4, 1909. As soon as the peritoneal cavity was opened an immense amount of free, old, dark-colored blood escaped. This fluid was evidently not due to a rupture, but was the result of a diapedesis into the peritoneal cavity from the congested abdominal viscera. The mass proved to be a gravid sac, containing a five months' living fetus. The placenta was attached for the greater part to the omentum, the small intestine, the right and left adnexa, from all of which it was separated without any great difficulty. A large gauze drain was introduced posterior to the uterus, and the abdominal wound was closed in layer sutures. During the operation the patient received intravenous saline infusion of 14,000 c.c.

This was a case of tubal pregnancy originally which, after rupture or abortion, was converted into an abdominal pregnancy. The fetus was a monster and presented a globular pedunculated mass, about the size of a hen's egg, springing from a pedicle which extended from the ensiform cartilage to the pubes in the median line. The mass was everywhere covered with a thin translucent layer of peritoneum through which might be seen

the intestines, the liver and the heart, which, after the operation, pulsated for fully twenty minutes. Upon opening the covering, the sac was seen to contain the entire liver and stomach, small and large intestines, the spleen, the pancreas, ureters, upper part of the bladder, and the heart. All these structures passed into the cavity through a defect in the anterior wall. The right half of the diaphragm was entirely missing. The diaphragm had lost its anterior and right attachments to the chest, and was dislocated downward so that part of it was within the tumor. The fetus presented the following deformities: There was an imperforate anus; both feet were held in a position of extreme equinus valgus; there was an edema of the posterior part of the neck, the occiput and the frontal regions.

The term monstrosity might be applied to any variation in the normal development of the human fetus. Their great variety and the impossibility of establishing sharply defined divisions made the classification of fetal deformities very difficult. Many classifications had been made, but that of Saint-Hilaire was the one most commonly employed. The specimen presented by Dr. Ladinski was a celosoma associated with a prolapse of the heart into the hernial sac and an absence of the anal orifice, conforming in some respects to the type designated as agenosoma by Saint-Hilaire.

DR. WILLIAM S. STONE was very much interested in these cases of tubal pregnancy which later went on as abdominal; such cases often ruptured between the layers of the broad ligament. The cases he had seen were all hospital cases and the diagnosis had always been fraught with difficulty. It was quite surprising in spite of the amount of information they had in these extreme cases how difficult the diagnosis after all is. Dr. Stone asked in regard to her menstrual history; was it regular during the past few months and prior to the operation?

DR. LADINSKI replied she had amenorrhea and then spotting for some time.

When he had removed the fetus he immediately proceeded to remove the placenta. The placenta was very closely attached to the abdominal viscera, but he felt it would be better to remove it *in toto*, and his result justified him in doing it. Twenty-four hours after operation he removed the drain, which was left in merely to check the parenchymatous oozing. The wound healed by primary union.

The advantage of treating the placenta in this manner has been forcibly demonstrated in this case by the primary union, and by the short convalescence. If the case had been tamponed it would have required a long siege of drainage with a prolonged convalescence, and the final result, because of the probable presence of peritoneal adhesion with its consequent after-effects, could not be compared with that obtained here. The additional hemorrhage caused by the removal of the placenta was inconsequential in comparison.

DR. EUGENE H. POOL reported a case of

UNILATERAL TWIN TUBAL PREGNANCY.\*

DR. HERMAN GRAD had seen one case of twin tubal pregnancy. The patient was brought to the hospital in a state of collapse. She had a very bad internal hemorrhage. Upon opening the abdomen two small fetuses floated out of the incision from the abdominal cavity. The hemorrhage was terrific, and the patient died before she was removed from the operating-table. He said he had never seen such an alarming hemorrhage. This was the only case of twin ectopic he had ever seen.

PREMATURE MENOPAUSE.

DR. MEYER MAURICE STARK said that the term menopause as generally understood applies to a collection of phenomena appearing with the cessation of menstruation and comprehends the whole process of senile involution of the generative organs. These phenomena may manifest themselves over a period varying from one to ten years. Anatomically the generative organs are the first seat of the involution process, but later the whole body takes part in it. Currier has classified the changes as those resulting from the menopause, those causing the menopause, and those coincident with the menopause. In a series of autopsies performed by Dalton in the study of the corpus luteum it was found that the first atrophic changes appear in the ovaries. Progressive with the changes in the ovaries there is noticed in the uterus first congestion and hyperplasia, followed by atrophy. The Fallopian tubes shrink and become shorter, the fimbriæ gradually disappear, the vault of the vagina contracts, the vagina becomes shorter, the introitus becomes narrower, and the secretions become changed and diminish in quantity. The pubic hairs become straighter, the labia minora contract and sometimes disappear; the mammary glands begin to shrink, frequently only after a preliminary fatty enlargement. The anatomical changes which produce the menopause are found mostly in the ovaries. Statistics are plentiful as to the usual age at which the menopause occurs. Many authorities cite cases occurring at advanced age. It is however the consensus of opinion that any menstruation after the age of fifty-three should be looked upon as pathological. From an inspection of statistics it is found that in one-half of all cases the menopause occurred between the ages of forty-five and fifty; in one-fourth of all cases it occurred between the ages of forty and forty-five; in one-eighth of all cases between the ages of thirty-five and forty, and in one-eighth of all cases between the ages of fifty and fifty-five. Most authors agree that the earlier menstruation begins the longer it is likely to continue. The average duration is estimated by Tilt as thirty-two years. Menstruation that ceases before the age of forty is irregular, and when before thirty it is premature.

\*See original article, page 606.

The reader of the paper collected eleven cases during the years 1907 and 1908 from the clinic at the Beth Israel Hospital and had collected forty-eight cases from literature, and of these Edward Krieger cites thirty-five. Of these thirty-five cases three occurred at the age of twenty-one years, two at the age of twenty-two, one at the age of twenty-three, one at twenty-four, two at twenty-five, one at twenty-six, three at twenty-seven, three at twenty-eight, three at twenty-nine, and sixteen at thirty. Dr. Stark has collected in addition to these twenty-four cases. Wherever recorded in these cases, the examination of the genitals revealed conditions not dissimilar to those appearing at the normal menopause. Whether or not these latter conditions are the result or the cause of menopause is not at all clear unless we accept the findings of Dalton, that the first signs of atrophy begin in the ovaries and become quite marked before the uterus begins to diminish in size. And thus the uterus comes to be regarded as the retrograde metamorphosis of a gland which has become functionally useless. The changes, therefore, in the ovarian parenchyma are important factors in the question under consideration. It has been observed that in acute febrile diseases and in the exanthemata the parenchyma of the ovaries suffered sympathetic changes and these same primary changes resulted in a cessation of menstruation. Courty has cited three cases in which the menopause ensued after cholera. That hyperplasia resulting from frequently succeeding pregnancies should result in early menopause is evident, when the inevitable retrogressive change following such hyperplasia is considered. Meyer reports a case in which after six successive pregnancies, menopause ensued at the age of twenty-nine. Here the defective enervation due to the anemia of numerous pregnancies stands in a causative relation. Such agencies as peritonitis and the excessive involution seen in lactation are given as etiological factors. It is indeed a remarkable feature that psychical influences should have a permanent damaging effect on the menstrual mechanism. Several of the cases reported by Zilt and Walters were attributed to fright and sudden affliction. Borner and others give heredity as an occasional cause of prematurity. Obesity was thought by Kisch to be the cause and not the result of the early cessation of menstruation. Currier states as a constant rule that a woman under thirty who becomes obese usually suffers from amenorrhea or dysmenorrhea and in addition is usually sterile. It is a noted fact that many women begin to take on flesh at or after the menopause or, in other words, at a period coincident with sterility. This fact is a feature in many of the cases cited in this paper. The tendency seems to have been the rule in nearly all of our cases and in most of those where the physical condition was mentioned. Sterility and amenorrhea are the matters concerning which the patients with early cessation usually seek advice. Literature abounds however in numerous cases in

which pregnancy has occurred after complete cessation, and this not only in early cases but even in typical ones. Piron tells of a woman who aborted a two months' fetus at the age of seventy-two. In Tilt's series of forty-nine cases of menopause between the ages of twenty-nine and thirty-nine, there was an average of three children in twenty-six married women; of the eight married ones in the present series four bore children. The occurrence of eleven cases out of 3,301 who presented themselves at the Beth Israel Clinic in the years 1907 and 1908 shows a frequency of one in 300, by no means an insignificant percentage. None of the usual causes cited figured in this series of cases. The absence of previous or subsequent local or constitutional disease is the rule. They seemed to be from the outset types of irregular or scanty menstruating in which the ovarian function has worn itself out, so to speak, without impairing the health of the patient. Whether this is due to faulty development in the generative organs cannot be said, though it is difficult to look at the cases in any other light than as presenting an unnatural condition due to a defect or disease of some kind. Only those are included in the series who have been under observation for two years or those in whom the function of menstruation has been absent for four years.

DR. HERMAN J. BOLDT said that the instances in which heredity was a factor in premature menopause, so far as his observations went, were comparatively few. He had seen a number of cases in which the menopause was established prematurely, below the middle twenties, but it was impossible to tell definitely just what the cause was. However, in most of the instances that had been under his observation, there were atrophic changes, and in about 25 or 30 per cent. there had been the results of traumatic lesions—namely, indiscrete curetting; but puerperal infections also played an important part.

DR. HERMANN L. COLLYER believed that the statistics presented were to be criticized; undeveloped uteri could not be compared with perfectly developed uteri. These cases that were reported as having an early menopause at twenty-one were unfortunately in women without a perfectly formed uterus and ovaries.

He believed that in the classification of the cases of early cessation of menstruation, there should be three, viz.: 1. Undeveloped uteri; 2. traumatic injuries to the uterus; 3. diseased uteri by specific causes, either gonorrheal or syphilitic. He did not think it was right to include in the statistics those cases of undeveloped uteri because menstruation was liable to cease at any time in such cases.

DR. HERMANN GRAD said he had not made great study of the subject under discussion, but there were three things that should be noted, viz.: 1. Menstruation was irregular from its beginning; 2. these women had a tendency to become fat; they also had a masculine appearance, with robust and oftentimes

clumsy bodies; 3. when menstruation was irregular and they had born children, traumatism was frequently at the bottom of the cause of the premature menopause. No doubt many cases were due to undeveloped uteri and ovaries as well.

DR. M. M. STARK closed the discussion. The classification he presented was his own. There was one thing that nobody seemed to have taken note of, at what age should menopause be classed as premature? He placed this age at thirty. Cases between the ages of thirty and forty were quite numerous; but the cases that occurred under the age of thirty, in women who were entirely well in every way, who were not robust or fat, but in splendid health, were rare. There seemed to be many cases of premature menopause without assignable cause. Dalton, who had made many autopsies, came to the conclusion that premature menopause was connected with atrophic ovaries.

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*Meeting of February 24, 1910.*

S. M. BRICKNER, M. D., *in the Chair.*

DR. WILLIAM S. GOTTHEIL reported

A CASE OF ERYTHEMA MULTIFORME GESTATIONIS.\*

DISCUSSION.

DR. JAMES N. WEST said that since Dr. Gottheil had made a diagnosis of erythema multiforme gestationis in a member of his own family, he had two or three cases under observation, and was able to make the diagnosis because of the manner in which Dr. Gorrheil illustrated the disease to him. The last case he saw was in a baby three or four months of age. The parents were very much worried, thinking the infant had some eruptive fever. Dr. West made the diagnosis of erythema multiforme gestationis; the disease ran three weeks and then disappeared. Thanks to Dr. Gottheil, he was able to make the correct diagnosis and could assure the parents that the child did not have what they feared, some infectious fever. These cases were of exceeding interest.

DR. GEORGE H. BALLERY inferred from Dr. West's remarks that he was talking of a lesion that occurred under different conditions; Dr. Gottheil said that the lesions occurred during the period of gestation and that they depended upon the pregnant condition, disappearing when the pregnancy was concluded. This was a peculiar form of the disease occurring during pregnancy.

DR. SAMUEL M. BRICKNER said that skin lesions occurring during pregnancy had interested him very much and he had been fortunate enough to see different kinds of eruptions occurring at this period, but had never seen an instance of erythema multiforme gestationis. The only very serious case he had ever seen appeared at the Mt. Sinai Hospital some years

\*See original article, p. 614.

ago. About four years ago he had first described a peculiar condition of the skin arising during pregnancy and from its pathological picture simulated fibroma molluscum, and hence was named fibroma molluscum gravidarum.\* This had been shown before the Section on Obstetrics and Gynecology, and consisted in peculiar whitish, or brown, sometimes black wart-like excrescences upon the neck and under the breasts, appearing during the early months of pregnancy and becoming darker as pregnancy advanced, and then disappearing toward the end of gestation or six or eight months later. In every instance of this nature that he had seen, these excrescences entirely disappeared after the pregnant state. Halbin of Vienna about the same time described a condition that probably had been seen before, an appearance of lanugo-like areas only occurring during pregnancy. They probably were not very rare. Only last summer Dr. Brickner had seen a patient with an intense eczema which appeared during the last month of her pregnancy and which disappeared promptly after the birth of the child.

Dr. WILLIAM S. GOTTHEIL said that although he had seen many cases of erythema multiforme he had never before had occasion to consider them in connection with pregnancy.

LARGE RETRO-PERITONEAL TUMOR PROBABLY ARISING FROM THE  
TRANSVERSE COLON BETWEEN THE LAYERS OF  
THE TRANSVERSE MESOCOLON.

Dr. HERMAN GRAD reported this case. Six months prior to the woman's admission to the hospital she was told that she had a tumor in the abdomen; the discovery of this growth was made during a physical examination by a woman who examined her for a position before the Civil Service Board. Prior to this examination she was unaware of any trouble. She presented no symptoms whatever except that she had to wear her corsets somewhat looser and her dress fitted her tightly. The patient was well nourished, somewhat pale in appearance, experienced no pain, and was able to do her work. She slept well, had a good appetite, and considered herself perfectly well. She applied at the hospital for the removal of the tumor, because she herself noticed an enlargement.

The physical examination showed a woman well nourished who presented an abdominal tumor, filling the entire abdominal cavity, but the bulk of the mass was situated in the upper abdomen. The tumor felt hard and unyielding. There was dullness on percussion all over the abdomen. There was an area of tympanitic percussion between the liver dullness and that of the tumor. There was a tympanitic sound on percussion on the right and left side of the abdomen below, as well as over the pubic region. Pelvic examination showed the pelvis to be free of the tumor. The uterine adnexa were normal, and the uterus was prolapsed to the second degree. The cervix and

\*AMER. JOUR. OBST., Feb., 1906.

perineum were lacerated. A diagnosis was made of a tumor in the upper abdomen, the nature of which was doubtful, but it was thought that probably the tumor was of pancreatic origin. Kidney tumors could be excluded by the situation of the mass and by palpation.

On November 2, 1909, the abdomen was opened by Dr. Grad's Chief, Dr. P. F. Chambers. The incision was made in the median line just above the umbilicus. It was then found that the tumor was postperitoneal, adherent to the transverse colon, and filling the entire upper abdomen. Pushing the stomach up toward the diaphragm and reaching as far under the liver as the hand could reach, an attempt was made at enucleation. During this procedure the tumor ruptured, causing a severe hemorrhage. The enucleation was rapidly completed, and then it was found that there was a rent in the transverse colon an inch in diameter. This was immediately repaired with a double row of sutures of catgut. There was a moderate hemorrhage from the layers of the mesocolon, which required careful suturing for its control. The transverse colon was dropped back into place, the torn peritoneal surfaces repaired with fine catgut, and the abdomen was closed without drainage. The patient left the operating table in excellent condition with very little shock.

For several days after the operation the patient showed considerable gastric disturbance manifested by nausea and frequent vomiting. The temperature remained practically normal. The bowels moved spontaneously on the third day. The abdominal wound healed by first intention. The patient left the bed in two weeks, but for some time after she suffered with nausea and vomiting, and at times it was difficult for her to retain her nourishment. After some weeks this gastric irritability subsided and she was dismissed from the hospital in good condition. She lost very little in weight, was able to eat solid food, and no new symptoms arose. The abdomen was flat and the incision looked normal.

The pathologist reported that it was difficult to make a decision as to the nature of the tumor, but the nearest diagnosis he could arrive at was that it was a fibrosarcoma arising from the transverse colon and invading the transverse mesocolon. The clinical symptoms were not indicative of a malignant tumor; and, therefore, a definite diagnosis could not at present be arrived at.

#### DISCUSSION.

DR. ROBERT T. FRANK reported an instance in which a tumor appeared in the same situation as did the one reported by Dr. Grad. This tumor was also solid, was retroperitoneal, and was situated between the stomach and the transverse colon. When Dr. Frank operated upon the patient, the tumor seemed fluctuating, but the introduction of an aspirating needle was followed by a very severe hemorrhage. He was content to simply excise a piece of this tumor and submit it to the pathologist. The pathologist reported that the growth was a fibrosarcoma prob-

ably of pancreatic origin. Sarcomata of pancreatic origin, as they all knew, are quite frequent. In this case there was nothing to be done because it would have been impossible to enucleate the growth.

DR. H. GRAD said that in his case the pancreas was not invaded at all; the pathologist could not find anything that resembled pancreatic tissue.

DR. JAMES N. WEST read a paper on

#### REPAIR OF CENTRAL LACERATION OF LEVATOR ANI AND PERINEUM.

Repair of a lacerated perineum is an operation of such minor character, and so frequently performed, that it is my belief that the real importance of it is by no means appreciated, even by many of those who do the operation most frequently. When we consider the group of pathological conditions which may follow a laceration through the levator ani and destruction of the support given by this muscle, "the diaphragm of the pelvis," we must realize its importance. When we consider that this injury occurs to the mothers whose duty it is to assume the labors of the household and the care of the children, and who find it necessary to bear so many of the real physical burdens of existence, we must again realize the enormous importance of it to the individual. If we will place ourselves in the position of the unfortunate woman who has the support of the pelvic contents destroyed and consider what happens when she lifts a burden or takes a deep breath or performs any act in which the muscles of the abdomen play an important part, we must realize the sense of weakness which she must feel. With every effort at lifting a weight she feels as though the pelvic organs were coming down and out of the body. And this indeed is true to a certain extent, because with laceration of the levator ani muscle and fascia and preservation of the sphincter ani, even the act of defecation tends to draw the uterus downward and backward, and force the rectum forward through the hiatus created by the laceration. This force, continuing to act constantly, by degrees leads, as a rule, to retroversion of the uterus and to pushing forward of the rectum into a rectocele, to descent of the anterior vaginal wall and the formation of a cystocele, and often eventually to a prolapse or procidentia uteri. All these evils with their associated pathological conditions of hypertrophy of the cervix, erosions, irritation of the bladder, and other symptoms more or less associated, follow naturally as a result of the descent of the pelvic organs. We have, therefore, in this injury, a laceration of the vaginal wall through the levator ani muscle and fascia and the perineum, a condition which calls for an operative technic which shall restore the torn parts in order to prevent the occurrence of the sequelæ incident to such an injury.

A recent work on gynecology states that thirty-three different operations have been described for the repair of a lacerated perineum. Does this mean that the repair is so easy that it can be satisfactorily accomplished in thirty-three different ways?

Or does it mean that the operations usually performed have been so unsatisfactory that, in their efforts to reach out for a better operation, thirty-three different methods have been devised? I believe the latter is true. If we have a remedy that is a specific for a given disease, we will use that remedy exclusively to all others, because it is a specific. And if we have any one operation which shall give entire satisfaction in repairing these lesions of the vaginal wall and perineum, we would certainly not have thirty-three different operations described for this purpose.

In my efforts to repair this injury, I try to relieve my mind of any thought of any particular man's operation, but to make a study of each individual case, because each case must be operated upon according to the injuries which are found. In order to understand the exact nature of the operation to be performed, we must understand the anatomy of the structures to be operated upon. We must appreciate what each little retraction of tissue means. We must recognize the change in the relation of the anus to the fixed parts, namely, the pubis and the meatus urinarius. One of the most evident effects of laceration through the levator ani is a dropping back of the anus toward the coccyx. The usual measurement in the average woman from the meatus urinarius to the anus is from one and three-quarters to two inches. The usual measurement where the levator ani has been lacerated is about three inches. Our operation must be so devised and executed that when completed the normal distance from the anus to the meatus shall have been practically restored.

I was first led to the adaption of the technic to be described by my failure in some of the operations as formally performed and by seeing a fair proportion of the cases upon which I had operated return after a time, varying from a few months to a year, with practically the same deformity as that which had existed at the time of operation. This led me to think that in a certain number of cases at least I had failed to bring together the tissues which should have restored the parts to their normal relations. I began to study the action and situation of the levator ani in normal vaginae. I found that it lay about three-quarters of an inch within the orifice of the vagina and that a certain portion of it seemed to pass down and incorporate itself with the vaginal wall, giving a sphincter-like action which held the posterior vaginal wall in contact with the anterior. This conclusion was reached after studying the situation of the muscle in unlacerated vaginal walls and comparing them with those in the lacerated vaginal walls. So that now the first step in the repair of these lacerations is to carefully study the situation of the levator ani and of the more superficially situated muscles. I found that, in the vast majority of cases, the central decussating fibers of the levator ani have been torn apart. Oftentimes no scar is evident at the site of the separation, but the fasciculus of the muscle can be definitely followed along the side of the

vagina, and the rectum can be seen to force itself forward between these bands.

The operation in its conception is most simple. Its execution at first was a little difficult until experience had taught me not only how to pick up this fasciculus of the muscle and the fascia with the suture from the sense of touch, but also that it could very easily be done by the sense of sight.

*First Step: Denudation.*—As a rule the land-marks adopted are fairly distinct and satisfactory. For the upper land-mark we take a point in the center of the vagina at a position where the anterior and posterior walls come in contact, usually about two and one-half inches from the fourchette, depending somewhat upon the extent of the rectocele. At this point a suture of a No. 3 catgut doubled is passed through the mucous membrane so as to get a firm hold upon it, to act as a land-mark and for purposes of traction. Coarse catgut is used in order that it may not tear out in the handling. The lower land-marks are the two lowest carunculæ myrtiformes on each side. Beginning at the left caruncle myrtiformis, a strip of mucous membrane is cut way up to the upper land-mark in the vagina. Without cutting off the strip of mucous membrane, a corresponding strip is cut way down to the right caruncle myrtiformis. This process is continued until a complete denudation has been made down to the fourchette. This forms a triangular denudation with the apex up in the vagina a distance perhaps two and a half inches, and its base, representing the perineum or fourchette, from one caruncula myrtiformes to the other. Up to this point the denudation and the operation are practically the same as practised by Hegar, and known as "Hegar's operation."

*Second Step: Picking up the Levator Ani Muscle.*—This step in the operation is perhaps the most important one and is one that is not so easily performed until one has become accustomed to recognizing the levator ani muscle both by the sense of touch and sight. The muscle is picked up first on the left side close to the side of the rectum and at the lowest point at which it can be felt. The suture passes from above downward on the left side, and out toward the side of the pelvis, gathering up distinctly the muscle near and at the side of the rectum, then crosses over and passes from below upward on the right side gathering in the corresponding bundle of muscle and fascia. This suture is then tied so as to bring the fasciculus of the levator ani in front of the posterior vaginal wall. Two continuous sutures are taken with the same suture to bring together the little fold of tissue which has been formed by tying the first suture. These sutures are not carried down sufficiently far to allow the cut ends to present upon the perineal surface; in other words, they are to remain buried. I have found that the best suture for this purpose is No. 1 forty- or twenty-day chromicized catgut, tied with three knots so that the ends may be cut very short; thus leaving as little foreign body buried as possible.

The next step consists in making a similar row of sutures a little higher in the levator ani muscle and thus bringing together a little broader band of muscle in front of the vaginal wall and incorporating with it the firm band of levator ani muscle and fascia.

*Third Step.*—Bringing together the mucous membrane from the apex of the denudation downward.

We next begin at the apex of the triangle and bring together the denuded surface of mucous membrane until we come to the bridge of tissue formed by the united levator ani muscle, with interrupted sutures of No. 2 chromicized gut. These sutures are passed down to the bottom of the sulcus formed by traction upon the carrying thread, and lie about one-third of an inch apart. At this point a deviation is made in the manner of passing the sutures. They no longer go to the bottom of the sulcus, but pass in deeply enough to bring together the mucous membrane and a little of the cellular tissue beneath it, disregarding the deeper tissues. The object of making these sutures shallower than those higher up is to build up a symmetrical vaginal wall and not to bind the mucous membrane down to the deeper tissues, thus causing the vagina to remain permanently gaping. The hiatus, which is left by the failure to carry these sutures to the bottom of the sulcus, is overcome by a different set of sutures passing in at a different angle to be described later.

The last of these sutures lies about one-third of an inch within the vagina from the carunculæ myrtiformes.

*Fourth Step.*—Bringing together the perineum with silver wire sutures.

The next suture which completes the union of the vaginal mucous membrane we may conveniently call the "crown suture;" it passes in opposite the top of the denudation under the caruncula myrtiformes and comes out just beneath the last catgut suture. This suture, together with the others which complete the union of the perineum, is of silver wire. It is usually necessary to use from four to five silver wire sutures. These sutures should be passed with a carrying thread, and a No. 28 wire is the best size. They pass in radiating toward a common center which is deep within the denuded area and corresponds with the portion of the levator ani which has last been brought together with the buried sutures. The action of these sutures radiating as they do to a common point in the levator ani is to draw the anus forward and to bring the perineal body into accurate contact. They pass deeply into the tissues and gather up a substantial body of the elastic tissues of the perineum proper. The ends of the wires are drawn taut and twisted at right angles, and each has a perforated shot placed upon it about one-eighth of an inch from the line of union. This completes the operation.

The results in these cases have been extremely satisfactory. Since I have followed this method of restoration of the levator ani, when torn in the center, there have been no cases of break-down of the perineum, and the examination afterward shows as a rule

that the anterior and posterior walls of the vagina lay in accurate contact, and that the sphincter-like action of the levator ani is completely restored. In several cases which have been repaired in this manner I have had the opportunity to see the effect of subsequent labor and, as a rule, there is no serious tear of the perineum; the perineum seems to bear the strain of labor remarkably well. In some instances a slight superficial tear has occurred which has been immediately repaired. In other words, because it has been torn before it does not necessarily follow that a subsequent labor will be followed by laceration of the levator ani.

#### REMARKS.

The after-care of the patient is almost as essential to success as the technic of the operation.

The patient should be allowed to pass her water, and after each urination the parts should be irrigated lightly with a solution of boric acid.

The bowels should be moved at the end of forty-eight hours, with calomel, followed in six hours by salts. Every day thereafter a soft or liquid movement should be assured. If for any reason the bowels have failed to move and an enema should have to be given it should be a small one and given with great care. The following enema will usually prove effective: Inspissated ox-gall ℥ss, glycerine ℥i, mag. sulph. ℥ii, warm water enough to make 12 ounces. The parts should always be gently and carefully cleansed after the bowels have moved.

Douches should not be given unless a discharge should appear; in this case the douche should be of one-half strength peroxide of hydrogen followed by 2 per cent. carbolic. This may be repeated every second day if necessary.

The stitches should be removed on the twelfth day and the patient may get out of bed on the fifteenth day.

The operation should not be performed if any septic condition exists in the pelvis.

#### DISCUSSION.

DR. CHAS. JEWETT said that the thirty-three operations to which Dr. West had alluded should not be taken as indicating confusion in the surgery of the pelvic floor, but rather as the different steps in the process of evolution by which we have reached the technic employed by most of us. The aim of the modern operation, of which Dr. West's is a type, is to restore the levator ani muscles to something like their normal relation to each other.

The principal muscles concerned are the pubo-coccygei. These muscles sweep from the posterior face of the pubic bone on either side, and passing backward, laterally to the vagina and rectum, go to the coccyx. They may be compared to the recti abdominis. Just as in the latter the space between them, except when perforated for the transmission of the tubular

viscera, is bridged by fascia. This fascial bridge may be looked upon as a conjoined tendon entirely similar to that between the recti.

The essential character of most perineal lacerations is a rent in this conjoined tendon at one or both sides of the vagina. The rent results in diastasis of the levators and consequent displacement of pelvic floor and viscera. The modern reparative technic is an attempt to correct the diastasis.

My method of procedure is somewhat similar to that of Dr. West. My denudation is not a mere denudation, but a resection of a part of the posterior vaginal wall. The shape, like Dr. West's, is practically that of the Hegar operation. The dissection of vaginal wall from the rectocele is most easily and rapidly done with the probe-pointed scissors of the Mayo's. A longitudinal fold of the vaginal wall is picked up with tissue forceps, near the junction of skin and scar tissue. This is cut across and the scissors are pushed well up through this incision between vaginal wall and rectocele to the highest point of the displacement. This point may be definitely determined by the gloved finger in the rectum. Vaginal and rectal walls are partly separated by spreading the scissors blades. A few clips of the scissors complete the separation, and the loosened flap of vaginal plate is cut away.

The suturing may be done by any one of three or four methods so long as it effects the necessary approximation of the pubococcygei muscles and restores the conjoined tendon between them. This restores the principal structures concerned in the support of the pelvic organs. The superficial muscles, though not to be neglected, are of only secondary importance in the strength of the pelvic floor.

DR. SAMUEL W. BANDLER presented drawings to show his method of procedure in these cases for repair of lacerated perinei which supported Dr. West's statement as to the value of bringing together by sutures the torn levator ani muscle fibers in a bridge-like form. The various steps that Dr. West followed constituted one of the best of the thirty-three operations in vogue. Dr. Bandler said he had seen Dr. Waldo do a single stitch colpoperineorrhaphy, and he had tried it and found that he got very good results and with almost no failures due to infection; he attributed this to the fact that in the operation there was not a buried suture or knot anywhere in the denuded parts that were brought together. He used a similar method in cases of descent of the uterus, and even in cases of total prolapse. In those cases, however, he found subsequently a separation of the two halves of the denuded area that he had so well brought together, and instead of a linear scar from the posterior wall of the vagina to the anterior wall of the anus he found a scar that had resulted from a separation or a broadening, usually three-quarters of an inch wide, which gave little support to the rectocele. He therefore decided to bring together the two sides of the separated

levator ani muscle by means of one, two, or three special buried sutures. He demonstrated how this was done by drawings. The method described by him was especially valuable in cases where there was a total prolapse of the uterus and in which the operation of perineorrhaphy was brought to the greatest test. The results of the operation he described were very satisfactory, and infection was avoided.

DR. ARNOLD STURMDORF said that the title of Dr. West's paper, "The Repair of the Levator Ani in Lacerations of the Perineum," was well chosen in as much as it directed attention to the evolutionary factor in perineorrhaphy, namely, the repair of the lacerated levator ani muscle. This subject was elaborated by Dr. Sturmdorf and presented before the Medical Association of the Greater City of New York, February 15, 1905, and published in the *Medical Record*, April 1, 1905, although Dr. Holden, who wrote upon the same subject six months later in the *AMER. JOUR. OBST.* (October, 1905), was given all the credit by Dr. Kelly in his "Operative Gynecology," second edition.

Dr. Sturmdorf said that obstructive retention could not replace normal visceral support, and the immediate aim in perineorrhaphy should be based on the elementary surgical principle of accurate restitution of original anatomic relations, thus restoring, as far as possible, *functional* as well as *mechanical* support to the pelvic contents. The keynote in the clinical significance and therapeutic indications of pelvic floor lacerations was prolapse. Visceral prolapse is pathological visceral support, and restitution must be based upon a clear conception of the mechanism or normal support. At the present time the muscular and fascial equipment of the pelvic floor and viscera swayed the gynecological mind in the questions of genital support. Muscular and ligamentous elements served to support the pelvic contents, *not* by virtue of their *textual resistance* to displacement, but by *deflecting* the *displacement force* of *intra-abdominal pressure*; and paradoxical as it might seem, both the maintenance and disturbance of pelvic visceral equilibrium are the resultants of one and the same force, namely, intra-abdominal pressure under the influence of balanced or unbalanced deflection. The influence of pressure and deflection on fetal expulsion was a familiar phenomenon, while the same influence dominating visceral extrusion was unrecognized. The stimulus that excited the muscular component of intraabdominal pressure into activity induced a simultaneous counter-contraction in the perineal musculature. From the clinical standpoint, two forms of vaginal protrusions resulted from perineal lacerations, which might exist singly or combined. For convenience these two forms might be described as false and true prolapse. False prolapse was the simple protrusion of redundant and relaxed vaginal wall, and represented the condition usually cured by the stereotyped operations in vogue; these removed various patterns of the redundant vaginal tissues and reefed some of its fascial

attachments. True prolapse, on the other hand, was represented by the vaginal herniæ of bladder, rectum and uterus, and was not permanently cured by the above-mentioned procedures.

The surgical objective point in these latter cases must be that part of the perineal musculature usually involved in puerperal injury, namely, the broad anterior loop of the levator ani, which, springing from the posterior surface of the public rami, passed downward and embraced the lateral and posterior walls of the vagina. In the normal state this loop was distinctly palpable from within the vagina and rectum, as a broad resilient band, which stretched under the vaginal wall from one pubic ramus to the other, on a plane posterior to that of the pubic arch. Under all conditions of perineal rupture, the pubic attachments of this levator loop presented permanent palpable ridges. With these ridges serving as guides to the muscle, the postero-lateral mucocutaneous junction of the vagina was severed and the deep seat of the lesion exposed by carefully raising the cicatrized vaginal coverings. Utilizable remnants of the levator ani muscle could thus be readily located, and after isolation and trimming should be coapted by buried edge-to-edge sutures.

Having secured this muscular readjustment, the raised vaginal flap was permitted to settle into position, and *then only* should such of the redundant tissue be sacrificed as might not be utilized in restoring the contours and bulk of vagina and perineum. Trimming and suturing should be limited as far as possible to the cicatrices and lateral sulci, preserving the median aspects of the vaginal walls as much as possible.

The readjustment of the intravaginal conditions would vary according to the nature and the extent of the original lesion and its consequences; no two cases were similar, and the essential phase of this part in the reparative attempt was the restoration of the intravaginal perineal crest, which represented the fulcrum to the uterine lever. The apex of this crest must be so situated as to correspond to the cervico-corporeal junction of the uterus and the cervix must project free beyond it. The operator should fully understand what he sets out to accomplish, and he will readily adopt the simplest, easiest, and surest method to this end; let him, on the other hand, clog his mind with details and special plans of this and that operator, and he will be led to adopt an uncertain mixture of complicated, and often futile, procedures.

DR. HARRY ARANOW, in speaking in regard to Dr. Bandler's statement about Dr. Waldo's colpoperineorrhaphy, said that Dr. Waldo only used these sutures in the milder cases; but in the severer cases he used a modification of the Hegar operation, an operation similar to the one described by Dr. West, differing only in minor details. Dr. Aranow believed that the method described by Dr. West was the only radical one for the repair of a lacerated perineum.

DR. WILLIAM H. W. KNIPE said that in 1902 he had spent much time in dissecting out the levator ani muscle in both males and females, and after that he had had no respect for the perineal body, but all respect for the levator ani muscle.

With regard to the question of priority of this operation as described by Dr. West, this method was employed with but a few different details by Dr. George M. Tuttle from 1903 to 1905; he used it in one hundred or more cases, and Dr. Knipe said he only knew of one case where he failed to obtain the desired result. Dr. Knipe said he had never used personally any other method. In most of the cases, after the levator ani muscle had been thoroughly sutured together with interrupted chromic acid catgut, little else was necessary to form a firm perineal body. He did not know why Dr. West had found it necessary to use silver wire sutures in these cases after the levator ani had been sutured; in all the cases he had seen and operated on, after the levator ani had been sewn up, he could see no reason for suturing the perineal body except for the cosmetic effect, using a continuous small catgut suture for this purpose.

DR. LEROY BROWN believed that all gynecologists appreciated the importance of the levator ani muscle as a support of the pelvic floor and when torn all aimed at coapting the lacerated parts, but with different technic. The main thing was to bring up the posterior wall to lay against the anterior wall, and Dr. Brown's custom had been to do what was practically an Emmett operation except in those instances where there was a large rectocele. His object in introducing the sutures was to take up a good bite on each side in order to go well behind the torn edges of the muscle and fascia. He had heard people speak of dissecting out the muscle and seeing it, but he had looked time and time again and found that it was a very difficult thing to make out the fibers of this muscle, the levator ani, or to be sure that the edges of the fascia could be seen with the eye. The only way he could tell that he had gotten together the edges of the muscle and fascia was by keeping the finger in the rectum; then one could recognize the body by the sense of touch. Even experts at this sort of work state that they could not make out this muscle plainly, and some of them should give some reassurance to those who fail in this that the fault was not theirs. Dr. Brown frankly acknowledged that he found it difficult to point out the fibers of the levator ani muscle.

DR. JAMES N. WEST, closing the discussion, thought that Dr. Brown's ideas regarding repair of lacerated perinei were the old ones and contrary to those which he had attempted to present in his paper. He, Dr. Jewett, Dr. Bandler, and all the gentlemen who had spoken agreed with the author in the necessity of special sutures in the levator ani.

Dr. West had found so many cases that had been operated upon by various methods and without permanent results; these women returned, being miserable, weakened and as dis-

couraged as before the attempt at repair had been made. What he presented was a simple method of denudation, of picking up the torn or lacerated levator ani muscle, of bringing the fibers together, and closing the outer parts. The superficial sutures were introduced in order to restore the parts to their normal relationship. The priority of the operation he said he did not care to discuss because it was not worth while to even spend three minutes on it.

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## REVIEWS.

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**DAS GEBURTSHILFLICHE SEMINAR.** Praktische Geburtshilfe in achtzehn Vorlesungen, mit 212 Konturzeichnungen für Aerzte und Studierende. Von DR. WILHELM LIEPMANN, Privatdozent für Geburtshilfe und Gynäkologie an der Friedrich Wilhelms Universität; Direktor der Frauenklinik des Deutschen Bundes für Mutterschutz in Berlin. Published by August Hirschwald. N. W. Unter den Linden 68. Berlin, 1910.

In the preface the author explains that his desire is to promulgate the system of teaching practised by Leopold of Dresden. The book is written principally for the practising physician.

The obstetric "Seminar" is written in lectures, the cases directly from practice, before the students. The histories are cited and the treatment asked; the various answers by the students are cited. The entire management, with criticisms to the answers is described in such attractive and instructive style that one cannot help but be impressed with the value of the book and say "it is a want that has been filled."

The paper is good, and the diagrams excellent for the purpose.

The book is heartily recommended to all who practise obstetrics.

H. J. BOLDT.

**DIE PHYSIOLOGIE UND PATHOLOGIE DES WOCHENBETTES.** Für Aerzte dargestellt, von Privatdozent Dr. F. Fromme, Oberarzt der Königlichen Universitäts Frauenklinik zu Halle a. S. Mit 31 Abbildungen im Text und 2 Tafeln. Published by S. Karger, Karlstrasse 15. Berlin, 1910.

The careful selection of a diet is not necessary for a wet-nurse so long as the food is sufficient in quantity and wholesome.

Cystoscopic examinations show that the painful urination which frequently follows confinements is caused by traumatism, which is evidenced by edema of the trigonum and sphincter, and occasionally slight hemorrhages into the bladder mucosa.

The saprophytic hemolytic streptococcus, the one causing puerperal infection, can be recognized only by the method devised by the author. Care is taken by the author to differentiate the temperature elevations during the puerperium caused by the kind of organisms last mentioned, from those caused by

saprophytic endogenous organisms. Such differentiation can be made in the greater number of instances.

It is insisted upon that the rule should be to operate every patient with puerperal peritonitis as soon as the diagnosis has been made: the operative technic should have for its object, to remove the source of the exudate with the exudate. Large incisions in the lumbar regions, in the median line, and perhaps in the culdesac are advised, with drainage. The question of irrigation is one to be considered of doubtful benefit.

All instances of puerperal parametritis are caused by streptococcic infection.

The book is written in interesting style and is profitable reading to those interested in the subject whereof it treats.

H. J. BOLDT.

PROCEEDINGS OF THE THIRD ANNUAL CONFERENCE OF THE AMERICAN ASSOCIATION OF MEDICAL MILK COMMISSIONS, held at the St. Charles Hotel, Atlantic City, New Jersey, Monday, June 7, 1909. Cincinnati, Ohio.

This book contains the reports of all the various milk commissions instituted in our larger cities, reprints of the papers read at this Association, and a personal roster of all those connected in official capacities with milk commissions or organizations in the United States. To those interested in this increasingly important subject, this work will prove of great value. E. M.

A MANUAL OF THE WORKING METHODS AND STANDARDS FOR THE USE OF THE MEDICAL MILK COMMISSION. Compiled by the American Association of Medical Milk Commissions, 1909.

This book covers all the hygienic, chemical, and bacteriological methods necessary for the examination of milk. E. M.

INDEX DU PROGRES MEDICAL. 37<sup>e</sup> Année, 1909-1910. Administration, 41, Rue des Ecoles, Paris.

The first half of this book is a complete directory of the medical universities and physicians of France. The second half is a compendium and directory of the medical universities of the globe. Of those in New York City, only the Cornell Medical College finds a place. At the end a list and guide of the more important watering places of Europe is appended.

E. M.

PRIMER OF SANITATION. BEING A SIMPLE WORK ON DISEASES, GERMS, AND HOW TO FIGHT THEM. By JOHN W. RITCHIE, Professor of Biology, College of William and Mary, Virginia. Illustrated by Kare Hassman. Duodecimo, 200 pages. Yonkers-on-Hudson, New York, World Book Company, 1909.

As a work intended for public schools, this work fulfills every desideratum. It is clearly and simply written; the exposition is graphic and free from morbid suggestiveness. The arrangement is logical and most systematic. The illustrations are especially commendable for their impressiveness. The book can be cordially recommended. E. M.

RENAL, URETERAL, PERIRENAL, AND ADRENAL TUMORS, ACTINOMYCOSIS AND ECHINOCOCCUS OF THE KIDNEY. By EDGAR GARCEAU, M. D., Visiting Gynecologist to St. Elizabeth's Hospital and to the Boston Dispensary, Boston, Mass.; Consulting Gynecologist to the Quincy City Hospital, Quincy, Mass.; Member of the Massachusetts Medical Society, the Boston Obstetrical Society, the Boston Society for Medical Improvement, the American Urological Association, the American Medical Association, l'Association Française d'Urologie, Paris, France; Fellow of the American Gynecological Society. Pp. 421, octavo, with seventy-two illustrations in the text. New York and London: D. Appleton & Co., 1909.

This is a systematic, scholarly, and authoritative work and one which will do much to lift the pathology and classification of renal tumors out of the confusion of the older writers and place it on a clear, scientific, and firm basis.

Garceau gives in his classification only that which has stood the test of the histological analysis of the microscope. Of the malignant tumors of the renal parenchyma he places the hypernephroma first in importance, as he finds it, contrary to most figures before published, first in frequency—forty-five of ninety renal tumors examined being of this type.

Pure carcinoma, sarcomata, and papillary adenomata, in his experience, are extremely rare.

The first chapter, of 150 pages, is devoted to the solid tumors, malignant and benign; the discussion of hypernephroma filling the first 108. The second chapter, of fifty-two pages, discusses the embryonic tumors—the dermoid (or teratoma), the rhabdomyoma, and the mixed tumors. The third chapter, twenty pages, describes tumors of the renal pelvis and ureter. The fourth chapter, thirty-two pages, is on polycystic kidney. The fifth, of six pages, is on simple serous cysts of the kidney. Chapters VI, VII, and VIII take up perirenal tumors and adrenal tumors in adults and in children.

Actinomycosis and echinococcus of the kidney are thoroughly discussed in the next fifty-six pages, and then comes Chapter IX, of forty pages, which concludes the book with a very clear exposition of the various methods of determining the renal efficiency.

A TEXT-BOOK ON THE PRACTICE OF GYNECOLOGY. For Practitioners and Students. By W. EASTERLY ASHTON, M. D., LL. D., Professor of Gynecology in the Medico-Chirurgical College of Philadelphia. Fourth Edition, Thoroughly Revised. Octavo of 1099 pages, with 1058 original line drawings. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, \$6.50 net; Half Morocco, \$8.00 net.

The reasons why this work has attained a popularity that necessitates a fourth edition within five years are evident by even a superficial examination. The book is practical in the

fullest sense of this word. Anatomy, physiology, and finer pathology have been eschewed. Matters of academic importance or of controversy are given little space. The text is simply written and is not burdened by the names of authorities. The exposition is nicely systematized, important information is emphasized by a recourse to wide type spacing, while tables for differential diagnosis are abundant. Furthermore, nothing is left to one's imagination; the author's therapeutic instructions, especially the descriptions of operations, are set forth in the finest detail; his solicitude has gone even as far as to present a picture of the instruments required for each operation, including the size of the catgut. The illustrations are line drawings or graphic sketches and permit of no misinterpretation. The index is exceptionally complete.

As far as the text proper is concerned, there is little to criticise. The work is in many respects not thoroughly modern, and the few matters to which exception might be taken are largely questions of personal opinion.

E. M.

THE PREVENTION AND TREATMENT OF ABORTION. By FREDERICK J. TAUSSIG, A. B., M. D., Lecturer in Gynecology, Medical Department, Washington University, St. Louis; Obstetrician to the St. Louis Maternity Hospital; Gynecologist to the St. Louis Skin and Cancer Hospital; Fellow of the American Gynecological Society and American Association of Anatomists. 59 illustrations. C. V. Mosby Co., St. Louis, Mo., 1910.

This book has been written for the general practitioner and therefore only covers such ground as will prove of service to him. The work is divided into three parts. Part I includes some statistical data, a short resumé of anatomy and pathology, and a fairly circumspect discussion of etiology, symptoms and diagnosis. We believe that more attention might have been paid to differential diagnosis. Part II is devoted to a discussion of the prevention of abortion. The author's discussion of the relation of the Wasserman reaction to abortion is highly suggestive. The chapter on "The Prevention of Criminal Abortion from the Standpoint of Education and Legislation" is, to our view, too short. Part III is devoted to treatment. For the general practitioner, we believe the author's directions are not explicit enough. The appendix contains chapters on missed abortion, the various moles, and therapeutic abortion.

On the whole, the views of the author are sound, and the book can be cordially recommended.

M. B.

## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS

**Puerperal Infections and Puerperal Peritonitis.**—Reynier (*Jour. de méd. de Paris*, Oct. 23, 1909) says that the treatment of puerperal peritonitis and infection varies as much as the causes of the condition. There are different microorganisms which act as etiological factors, and different modes of entry. In most cases the bacteria penetrate by the cervix uteri, and breed in the placental débris. There are two symptoms of the presence of placental débris after abortion; these are a flow that will not stop, and uterine subinvolution. When these occur the débris must be removed by mild curettement. In some cases the finger is a very satisfactory curette. After labor curetting is less to be recommended. The uterus is soft, dilates easily, and there is greater possibility of perforation by the curette. Contraindications to curetting are diphtheroid patches, a thick, malodorous discharge, and general septicemic symptoms. Here douches with oxygenated water are better employed. When infection passes outside of the uterus and one horn suppurates, or a phlebitis begins, curetting is useless. Double salpingitis is always of gonorrheal origin. Infection passes out of the uterus by way of the lymphatics or of the blood-vessels. When it goes by the lymphatics a peri-uterine phlegmon results. The prognosis is very grave, as such infection ends in interminable suppurations and pyemia. Operation is of little value.

**Treatment of Puerperal Infections.**—A. Pinard (*Ann. de gyn. et d'obst.*, Oct., 1909) has arranged in tables the life-history of the patients in the Hospitals Baudelocque and the Lariboisière, and has formulated the prophylactic and curative treatment used in these hospitals. As prophylaxis the efforts of the staff are to keep every woman who comes to be confined in a perfect condition of asepsis. In normal cases vaginal injections are not given before labor unless there are pathological conditions in the vagina. During labor beginning with a full bath, a toilet of the external genitals is made with amidol soap and biniodide of mercury 1 : 4000. A vaginal injection of the same fluid is given, and a compress of sterilized cotton placed over the vulva. As soon as the fetus is expelled a vaginal injection is given, and another as soon as labor is completed. A new toilet of the vulva goes on and a new sterilized pad is placed, and renewed as often as needed. The external genitals are washed night and morning. All linen used about the woman is sterilized. Special cases which come in with a premature rupture of the membranes and which have had no care of the genitals before coming in, and every woman who has been examined before entrance is given an injection of 40 c.c.

of antistreptococcic serum. After delivery an intrauterine injection is given. The examining hand is sterilized with amidol soap and biniodide of mercury solution. No rubber gloves are used except in special cases. Prophylactic measures are most satisfactory. Intrauterine injections are of much value as curative means; properly given they are not dangerous and are efficacious; too often repeated and given too late they are harmful. Continuous irrigations are harmful. Curettage is rational when membranes or placental débris are left behind; thick, bloody, fetid lochia constitute the necessary indication for it. With normal lochia curettage is useless. Late curettage is harmful. Antistreptococcus serum is harmless, and serves a useful purpose in prevention and cure. The dose is from 10 to 40 c.c.

**Prophylaxis of Puerperal Infection.**—A. Bertino (*Folia Gin.*, 1909, Vol. II, Fasc III) has made personal researches as to the possibility of lessening the occurrence of puerperal infection by the removal from the vagina after labor of clots which are liable to become foul from bacterial action, and may assist in producing infection. The author's statistics are based on 526 cases delivered in which the clots were wiped away, after labor, with a sterilized tampon. If such women be examined a few hours after labor there will always be found coagula in the vagina; they may be lacking in multiparæ with wide open vaginas and in such as have prolapsed uteri. The administration of ergot and massage to cause uterine contraction are not always sufficient to remove these clots. It is not often possible to allow the woman to sit up a few hours after labor in order to favor the descent of these clots. Vaginal irrigations with physiological salt solution or antiseptic injections for their removal have not been shown to thoroughly remove them or to diminish the frequency of puerperal infection. The removal of the clots with swabs of cotton or gauze has a favorable influence in preventing fever, its assistance being partly due to the antiseptic power of the sterilized gauze. This treatment is very easy for the physician, but cannot be left in the hands of the midwife who attends many of the cases of labor. These coagula are soon the source of bacterial infection, which is shown by bacteriological examination a few hours after labor. The most frequently found bacteria are the facultative anaerobic forms, especially diplococci. No microorganisms of pathogenic nature were ever found in these clots.

**Incarcerated Retroflexed Pregnant Uterus.**—G. Orthmann (*Der Frauenarzt*, 1909, Part 10) says that a retroflexed pregnant uterus that has become incarcerated in the pelvis is a serious complication. It is an absolute hindrance to the development of the ovum, and may cause gangrene of the bladder. It is a mistake to believe that retroversion usually prevents pregnancy by causing sterility. This fact cannot be depended upon and every married patient known to have a retroversion should be kept under observation. The author describes a case of this

kind in which the patient had had difficulty in passing urine for at least four weeks before she came to him for examination. She then came with the diagnosis of extrauterine pregnancy ruptured into the bladder. The cervix was high up in the pelvis with an elastic tumor behind it and another soft voluminous tumor in front of it, which proved to be the bladder. The uterus was pushed above the promontory under an anesthetic, and the bladder catheterized, the urine being dark in color, filled with gangrenous flakes, and very bad-smelling. Under careful antiseptic irrigations the bladder condition cleared up and the pregnancy went on to term. The diagnosis of this condition is not very difficult. Urinary disturbance during the first month of pregnancy always points to retroflexed uterus. The elastic tumor should always indicate pregnancy. A careful use of the sound is justifiable. The long-retained urine offers a good culture medium for bacteria which enter the bladder, and the pressure on the tissues reduces their resistance to bacteria. The treatment of this condition is important. In some cases a retention of urine for 12 to 14 hours has produced gangrene, while in others as much as three or four weeks have elapsed before it occurred. Preventive therapy consists of reduction of every retroflexed uterus as soon as pregnancy occurs. This may be impossible if very firm perimetritic adhesions exist. Celiotomy may become necessary in case reduction is impossible. Immediate relief may be given by puncturing the bladder through the abdominal wall. When gangrene and peritonitis have set in the uterus must be emptied by the use of the sound or by rupturing the membranes, and the bladder treated.

**Treatment of Placenta Previa.**—J. Veit (*Berl. klin. Woch.*, Nov. 22, 1909) states that he does not believe that it is necessary to perform the Cesarean section to deliver patients with placenta previa. It is quite possible to accomplish delivery by other means and save both mother and child. The most important part of the treatment consists of preventing the separation of the placenta as long as possible. In case the child is dead or too young to be viable we should use version after the Braxton-Hicks method, and await spontaneous delivery. When the placenta is laterally or marginally implanted, if the presentation is of the head, rupture the amniotic sac; in other presentations dilate with a balloon, and extract with suture of any rupture of the cervix. In placenta previa centralis, employ forced labor after dilatation with a colpeurynter for several hours, or anterior hysterotomy. If the case will allow of delay, the general practitioner should tampon the uterus and bring the patient to a hospital before operating in any way.

**Management of Labor in Contracted Pelvis.**—E. Pestalozza, (*L'Obstét.*, Nov., 1909) says that the conduct to be pursued in contracted pelvis depends not only on the absolute degree of contraction of the pelvis, but on the relations of the pelvis and the fetal head. It is a mathematical problem to be solved in each

individual case. It is useless to depend on complicated pelvic measurements, which give only an appearance of scientific accuracy. Any pelvis that will permit of spontaneous delivery, or premature labor, or delivery by forceps, or version, or symphysiotomy, or pubiotomy the author calls *viable*; those which do not are *nonviable*. The limit of all therapeutic measures is found at about a 7.5 centimeter true conjugate. Below this delivery is possible only by Cesarean section or craniotomy. Even with this conjugate if the other diameters are also contracted delivery becomes impossible. Hence the other diameters must be measured as well as the true conjugate. The history of previous labors in a multipara is of value; the process of fetometry may give aid. The presentation affects the prognosis; hence to assign any pelvis to one or the other category on account of its true conjugate is erroneous. We may let labor come to term encouraged by the knowledge that 50 per cent. of women with contracted pelvises are delivered spontaneously. Prolongation of the expulsive period menaces the life of the child, and this is another element that must influence our judgment of the proper course to pursue. Cicatrices of a cervical tear lead us to fear rupture of the uterus, necrosis of the soft parts, and putrefaction of the amniotic fluid. The forceps are useful in cases of inertia rather than of contraction, being applied after the head has passed the pelvic brim, for extraction only. The author condemns pubiotomy in primiparæ with rigid soft parts, in infected cases, and in the home of the patient. Cesarean section is equally applicable in multiparæ and primiparæ, and with reference to the interests of the child is superior to pubiotomy. The author gives these rules: the operation should always be performed in a hospital; in the Trendelenburg position; with exteriorization of the uterus before opening the organ; with a transverse incision on the fundus, and without hemostasis before incision. In cases of infected amniotic fluid the Cesarean section should be excluded. It is indicated when there is some good reason for especially desiring a living child; and in asymmetrical pelvises with undilated rigid os. As to the extraperitoneal Cesarean section for infected cases, experience has shown that it is very dangerous in just these cases. Premature labor is a resource absolutely without danger to the mother, and if not produced before the thirty-sixth week is safe for the child also.

**Transplantation of the Ovaries.**—H. Cramer (*Gyn. Rund.*, Jahr. III., H. 16, 1909) says that the cells of the ovaries are among the least differentiated in the body, and hence easiest to graft successfully. The ovary being a gland with an internal secretion can be grafted into almost any part of the abdomen. It has been shown that grafting is more effective with young than older ovaries. The central portion of the grafted ovaries become degenerated and the peripheral portion is vascularized. This is because the surface more quickly attains a circulatory connection, the internal portion atrophying before this has de-

veloped. The transplanted ovary should be put into place as soon after its removal as possible. Keeping it in warm sterile solutions is responsible for failures, according to the author. The better the site to which the ovary is transplanted is vascularized, the more likely is the graft to take. One of the best situations is the subserous tissue on the anterior wall of the uterus between this organ and the bladder. In a twenty-eight-year-old woman who had double pyosalpinx and unilateral ovarian abscess he removed the normal ovary and placed it in this position, closing it into a pocket to avoid contact with the pus that was free in the pelvis. After three weeks the ovary had adhered and menstruation returned at four- to six-week intervals, while the patient regained perfect health. In three cases in which an ovary was transplanted from another person he placed it intraperitoneally. In two of these menstruation returned. In eighteen cases the ovary was reimplanted in the same individual after removal; in thirteen of these the author implanted only one ovary, the other remaining in the normal situation. In the other five cases both ovaries had to be removed and one was reimplanted, and in all five menstruation returned. In a woman of twenty-three who had atrophy of uterus and ovaries after her first labor menstruation returned soon after ovarian transplantation and still continues. The uterus has increased seven centimeters in length. The ovary of a twenty-seven-year-old osteomalachic woman was transplanted to a girl of twenty-one who had never menstruated and had infantile uterus, with the result that eight menstrual periods have occurred, the mammary glands have developed, and the uterus has increased in length.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Uteroadnexal Sclerosis Outside the Menopause.—Treatment and Prognosis.**—Roux de Brignoles (*La Gyn.*, November, 1909) says that the alterations of tissues in sclerosis of the uterus and adnexa vary with the period of evolution of the disease. In the beginning there are the lesions of congestion only; later, those of sclerosis become evident, and adhesions bind down the organs or unite them to one another. The uterus is generally large, hard, and pale; the tubes may be filled with liquids which are retained so as to form cysts; the lesions are not symmetrical. The uterus is atonic, the veins engorged, microscopically the uterus is subject to hyperplasia in the congestive period or sclerosis in the later period. In the beginning arteritis and periarteritis are found, then the connective tissue extends throughout the uterine structure, destroying the elements of the organism and substituting them by partial or total fibrosis. The ovaries may be hard and small or large and cystic. The Graafian follicles are destroyed. Small cysts result from the degeneration of ovules in different degrees of development, which explains their variety of size and appearance. Cysts are also formed from the corpora

lutea. The reproductive function of the ovary is entirely destroyed. The prognosis for function is absolutely bad. The patient is reduced to hopeless invalidism and no restoration of the diseased tissues is possible, relief being obtainable only by their removal. In the earlier stage of congestion there is hope of preventing the advance of the disease. The prophylactic treatment in young girls is the best of hygiene, outdoor life, and exercises such as shall prevent chronic pelvic congestion. Infection may be prevented by vaginal cleansing and hygiene. Hydrotherapy is of great value in the treatment of early sclerosis. Hot sea-water baths are especially useful. The sovereign remedy for sclerosis is uterine and pelvic massage. This should be given lightly, alternating with vibratory movements. Long hot douches and osmotic tampons with glycerin and ichthyol are useful. In case of menorrhagia hydrastis and hamamelis may be given between the periods, and viburnum prunifolium during the periods. Treatment applied to the uterine cavity is useless; curetting gives no benefit at all. Partial operations, removal of the adnexa of one side, and other procedures the author believes to be useless. Only a complete removal of the sclerosed organs by the abdominal route is indicated, and this will bring permanent relief.

**Intestino-uterine Fistulæ.**—Le Jemtel (*Arch. prov. de chir.*, November, 1909) finds that intestino-uterine fistulæ are exceptional. The author considers the cervico-vagino-intestinal and the utero-intestinal forms, of which he finds records of twenty-two cases. The cause in ten of them was rupture of the uterus during labor, seven spontaneous, and three produced by forceps or version. Eleven were the result of inflammations of different nature perforating the uterus. In cases of uterine rupture the intestine may be caught in the wound in the uterus, the contraction of the uterine muscle causing strangulation of the intestine, followed by gangrene of the included portion, with passage of the intestinal contents through the uterus. An abscess in the pelvis may become opened through the wall of the uterus, peritonitis ensue, and the same condition result. In cancer of the uterus the disease eats its way through the wall of the uterus by contact. The location of the fistula is generally between the small intestine and the uterine fundus. There are always present symptoms of pelvioperitonitis, no matter what the origin of the trouble. Protective adhesions prevent the spread of the fecal materials in the abdominal cavity, and the first definite indication of what has occurred is the passage of gangrenous, infective material by way of the cervix uteri. The diagnosis is extremely difficult up to the appearance of this sign. As to the diagnosis of the seat of the injury we can find out the uterine location by dilatation of the cervix. Thinness of the material passed indicates the involvement of the small intestine. The vagina and vulva become irritated and ulcerated from the contact of the discharge. There is generally amenorrhea, and attacks of acute

inflammation take place at irregular intervals. Rarely a spontaneous cure takes place. The condition is a very grave one, ending fatally from infection if not operated on. In labor if fistula has not been established an immediate hysterectomy is demanded; if abscess occurs it should be opened before nature has drained it through the uterus. When fistula has occurred an abdominal operation is called for, with anastomosis or enterorrhaphy.

**Treatment of Cicatricial Stenosis of the Uterus of Therapeutic Origin.**—P. Mauclaire and Burnier (*Arch. gén. de chir.*, Nov. 25, 1909) say that the use of caustics, liquid or solid, or the actual cautery has produced many cases of cicatricial stenosis of the cervix uteri. Formerly it was customary to use the silver nitrate stick or zinc chloride as an intrauterine application, repeating this as soon as the first slough had separated. This resulted in stenosis, sometimes partial, sometimes complete. If complete, menstruation became impossible and hematocolpos ensued. If partial, the flow was painful, altered in character, and irregular. Uteri have been found which had undergone complete atrophy on account of such use of caustics. Sterility was the result. In some cases pregnancy occurred and the cervix was undilatable. The result of such a condition might be rupture of the uterus followed by infection, ante- or postpartum. In nonpregnant cases hematosalpinx, pelvioperitonitis, pelvic hematocele, and pyometra have resulted. The prognosis of such a condition is bad. Such a uterus may become infected at any time. Every menstruation is painful, and the patient becomes a fretful invalid with an entirely changed disposition. The treatment of such a condition to be at all effectual must be operative, and a number of procedures have been devised by which functional power of the cervical canal may be restored. The author gives histories of twenty-three cases.

**Treatment of Osteomalacia by Adrenalin.**—Leon Bernard (*Presse méd.*, Nov. 20, 1909) states that at present we know of only twenty authentic cases of osteomalacia by adrenalin; therefore it seems advisable to record all cases successfully treated by this method in order to gain as much knowledge of the action of the drug as possible. These cases differ so much that it is not possible to draw any general conclusions from them as yet. The author publishes his observation of the action of adrenalin used by subcutaneous injection in a young woman who had an attack of osteomalacia at the age of sixteen years incapacitating her for walking. The menses were absent during this illness. She was immobilized in bed for a year and a half, when the menses returned and a cure was obtained. She remained in good health for ten years when the osteomalacic trouble returned and became so severe that she was bedridden and unable to move any of her limbs except the left arm. She was in constant pain, deformities had appeared, and she was unable to sleep. The author gave subcutaneous injections of a 1-1000 sterilized solu-

tion of adrenalin hydrochloride, injecting 1 c.c. every two days. At the thirtieth injection a marked improvement began; at the hundredth injection she was able to walk and act like any normal person, sleeping well, and going up and down stairs at will. All deformities had disappeared and her height, formerly decreased by a half inch, had returned to the normal measure. The results of treatment summarized are: arrest of the morbid process; cicatrization of the bones; relief of all pain; disappearance of deformities; and return of functional capacity. The author insists on the use of a sterilized solution, and subcutaneous, instead of intravenous injections. There are no bad effects of the treatment when given in this way. How the drug acts is not as yet determined. Certain symptoms of osteomalacia lead us to believe that there is suprarenal insufficiency. According to others it has to do with changes in the ovarian function. The suppression of the ovarian function causes hyperactivity of the suprarenal functions. There may be a certain antagonism between the two glands. The author does not believe that the action of adrenalin is to cause retention of lime salts in the system. He believes that rickets and osteomalacia are similar processes occurring at different periods of life.

**Spontaneous Rupture of Pyosalpinx into Peritoneal Cavity.**—C. W. Bonney (*Surg., Gyn., Obst.*, Nov., 1909, 542) records an instance of this accident with recovery after operation. He says that spontaneous rupture of a pyosalpinx or tuboovarian abscess into the general peritoneal cavity, producing acute fulminating peritonitis, is very rare. From the literature and by correspondence he has collected forty-five cases of this accident. In the severity of its symptoms it usually resembles other forms of perforative peritonitis. It conforms to the general rule obtaining in such cases, that the earlier operation is performed, the greater is the chance of recovery. It is a very momentous accident, having a mortality of 30 per cent. even in those cases in which operation is performed during the first twelve hours. It should be considered as the possible causative agent in all cases of acute general peritonitis of obscure origin occurring in females. Its proper treatment is immediate operation.

**Malignant Leiomyoma of the Uterus.**—M. W. Myer (*Surg., Gyn., Obst.*, Nov., 1909) describes under this title a diffuse uterine growth with a metastasis in the omentum. The entire omentum was studded with small hard bodies. In the metastatic tumor of the omentum the same microscopic picture exists as in the uterine tumor, namely, smooth muscle cells, some connective-tissue cells, and large oval cells with multiple nuclei. Active mitosis is also present in these cells. Such a picture could not exist in the metastases of a pure sarcoma. We have in this case a metastasis of smooth muscle cells or, what seems more rational, a metastasis of embryological cells, which have, after being transported to the omentum, developed on the one hand smooth muscle cells, and on the other connective-tissue cells.

**Tuberculous Infections of the Peritoneum.**—W. H. Allport (*Surg., Gyn., Obst.*, Nov., 1909, 529) says that the apparent difference in the incidence of peritoneal tuberculosis in the male and female is apparent rather than real, and such difference as exists is due altogether to the inclusion of the female organs within the peritoneal cavity. The apparent differences in the form of peritoneal tuberculosis are due: 1st, to differences in the location and structure of the organs involved; 2d, to a recognition of the disease at various stages in its development. Pathologically, the disease has but one form, which unfolds itself along the same morphological lines as in other parts of the body. Peritoneal tuberculosis is never primary. The most common avenue of entrance is the bowel; next, the lymph glands; next, the female genitals. Bowel infection may be secondary to that of the peritoneum, and the female genitals may receive infection in the same retrograde manner. Gravity plays an important part in the spread of intraperitoneal tuberculosis. The same is true of diffusion by contact and continuity. Temperature of a markedly febrile character is an indication of mixed infection. Especially true is this of *remittent* fever. High leukocytosis and temperature following operative interference are favorable conditions and indicate good resistance of the individual to the farther progress of the disease. In abdominal operations followed by prolonged fever and delayed convalescence, the possibility of the existence of hitherto unsuspected tuberculosis should be carefully canvassed by the operator. All specimens removed at abdominal operations should be thoroughly inspected for tuberculosis. The theory that ascitic fluid has a protective, curative, opsonic, or otherwise salutary function is incapable of proof. In all cases where recovery takes place, healing occurs after the resorption of the fluid and through the agency of active hyperemia and adhesions; the fluid exudate is a step away from recovery; the adhesion is the force which delimits and excludes the morbid process from further evil effects.

**Stem Pessary.**—J. H. Carstens (*Jour. Amer. Med. Assn.*, 1909, liii, 1730) recommends the use of the stem pessary for amenorrhea, premature uterine atrophy, amenorrhea in fleshy sterile women, dysmenorrhea, some displacements without adhesions, and sterility. It is indicated only when there is no septic or inflammatory pelvic condition, and therefore chiefly in young or unmarried women. Its introduction requires dilatation of the uterus under anesthesia and strict asepsis, rest in bed for one or two days, and phenolized douches twice a day during this time.

# DEPARTMENT OF PEDIATRICS.

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## ORIGINAL COMMUNICATIONS.

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### AN ESTIMATE OF THE VALUE OF PASTEURIZED AND STERILIZED MILK IN THE DIETARY OF CHILDREN.\*

BY

LEGRAND KERR, M. D.,

Visiting Pediatricist to the Methodist-Episcopal Hospital (Seney), the Williamsburg,  
and the Swedish Hospitals in Brooklyn, N. Y.; Consulting Pediatricist to the  
E. N. Y. Dispensary.

THE value of a food for use among children cannot be determined by one factor alone. Therefore, it is at once unsatisfactory and unwise to refer to our tables of caloric values and attempt to determine the value of a food by a study of its caloric units to the exclusion of other factors that in individual instances may have a larger bearing upon the question of value. However, the limitations placed upon the length and scope of this paper justifies the writer in limiting his consideration of these many factors. It will be sufficient to mention the chiefest of these and to state that along with the consideration of the caloric value of a food, in childhood, there must also be a consideration of the factors of reliability and digestibility. The reliability of either pasteurized or sterilized milk is apparently settled when we are confronted with data and figures which show that the processes have been properly carried out and the number of the bacteria markedly reduced. But this apparent reliability is far from sufficient. In the feeding of children the reliability of any milk is directly affected through all of its processes of modification and preparation until ready for the child to ingest and is even then indirectly affected through the processes of digestion and assimilation.

Unless every detail of pasteurization is carried out with exactness, the product produced is not much safer than ordinary untreated milk. And even when properly carried out the same

\* Read before the Brooklyn Pathological Society, March 10, 1910.

diligent care must be used to safeguard the product against contamination. Whether pasteurized or sterilized, the milk **MUST BE CLEAN** to start with. Although by no means entirely satisfying in his efforts, the producer is less of an offender in the contamination of milk than is the consumer. We are fully alive to the fact that either pasteurization or sterilization permits the producer to use a milk which would otherwise be unsalable within a few hours and that much of the milk subjected to these processes is unclean to start with.

Bacterial counts made of pasteurized milk (the process having been carried on outside of the home) have commonly shown that the initial count was higher in such a product than in certified milk. When the same milk was subjected to a count several hours later, the pasteurized product still maintained its higher count. The reason for this is not hard to find. The commercially pasteurized milk is reduced to a low bacterial count by the heating coils, but contamination takes place somewhere between the time of the completion of the process and the time at which the milk is ready for delivery. Under present conditions, then, we have products which are at least uncertain in their reliability.

To some physicians and to most of the laity, the subjecting of milk to either pasteurization or sterilization conduces to a sense of security and value which is not based upon fact but upon fancy or preconceived notion. The attitude is commonly assumed that either process renders the milk fit for use and makes further care unnecessary.

Such an assumption is presumption. Sterilized milk is never sterile; it requires a higher degree of heat than  $212^{\circ}$  to render this fluid sterile.

The writer maintains that we should not use a product that shows a high bacterial count *at any time*. Organisms even when destroyed by heat have already produced toxins which are not destroyed by the same process, and these reinforced by the products of metabolism of the countless colonies of previously existing organisms must certainly influence unfavorably the reliability and value of such milk as an article of diet.

Uncertain as the product is even when ordinary care is used by the producer to safeguard it, even more unreliable is the product when passed to the care of the average householder. For from four to six hours after delivery, the product remains where it was placed at the time of early morning delivery.

Slowly but surely this results in an increase of the temperature (except in very cold weather) with the consequent multiplication of bacteria and therefore deterioration of its value as a food for children. Even when placed in the ice-box, it is usually in one in which it is impossible to maintain a temperature of less than 50° F., and added to this is the chance of depreciation which comes when associated with other foods contained in the ice-chest.

Of what service is the delivery of a fit product if after delivery the milk is handled in a careless manner, is contaminated by unclean hands, is bottled in carelessly washed containers, is allowed to get above the temperature of 50° F., or is subjected to the many opportunities for contamination by an uninstructed mother or a careless nurse.

But irrespective of the care given the milk, what changes take place when the product is "treated" by heat?

#### STERILIZATION.

1. Coagulates the albumin.
  2. Renders the casein more difficult of precipitation by rennet.
  3. Frees some of the fat.
  4. Changes the sugar in some manner not yet determined.
- And the net result of such changes is:

1. An added difficulty of digestion which is more than most children can overcome without disturbance of the nutrition and the digestion.
2. Appreciable difference in the ability to digest the fats (free fat being difficult of digestion) and therefore a chronic state of *partial* fat starvation.

Pasteurization has been received by many with the same enthusiasm which welcomed sterilized milk several years ago; a time when bacteria-free food seemed to be our goal.

What has been said of the sterilized product is in a smaller measure true also of the milk treated by pasteurization. Milk treated by either process is rendered less valuable as an article of diet for children and in many instances the false sense of security born of its use still further lessens its value.

If either process is necessary, and at times it may be considered so, the process should be carried out in the home. And it should be strongly insisted upon that before the process is

carried out, the milk to be subjected to it should be of the best obtainable quality.

And I must again refer to a question I brought up some two years ago (*L. I. Med. Jour.*). That is, that if a sterilized or a pasteurized milk is used there must be a difference in its modification. These milks should not be given in as concentrated solutions as is the raw product. The only element which should remain as high is the sugar. By disregarding this detail, disturbances of digestion are sure to occur and the milk is often blamed when it is really the modification of it that is at fault. The simplest method for one who is not expert in the matter of milk modifications is this: when the determination has been made to change from raw milk to a pasteurized product, make the formula as usual, but finally add a diluent in the proportion of one of the diluent to seven of the ordinary formula, adding the sugar to make up the deficiency.

And always in addition to this there must be an effort to make up the fat deficiency, and this is done by the administration of oil. When a "treated" milk is used, oil is just as essential to the child, as is a fruit juice when feeding is by a proprietary food or a prolonged diet of only one food.

The writer feels that there must be some due regard paid to the chemical analyses of milk; that we must pay some attention to set rules and guides which are apparently based upon chemistry, physiology, biology, or laboratory experimentation, but as these are unsettled and are constantly changing, what is most needed in estimating the value of a "treated" milk is a wider knowledge of these things and a broader application of the principles of uncommon common sense in the feeding of children.

## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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SECTION ON PEDIATRICS.

*Meeting of January 20, 1910.*

*The President, JOHN A. WYETH, M. D., in the Chair.*

### EXPERIMENTAL EPIDEMIC POLIOMYELITIS.

DRS. SIMON FLEXNER and PAUL A. LEWIS presented this paper. Poliomyelitis has existed in some parts of the United States in the late summer and autumn months since 1907. The cause of the disease was unknown until very recently, and its mode of dissemination had not yet been discovered. Consequently, there existed no intelligent means of prevention, but the knowledge of the nature of the disease had been immeasurably advanced by the opportunity for experimental study opened up by the successful transmission of the disease to lower animals. In May, 1909, Landsteiner and Popper (*Ztschr. f. Immunitätsforsch.*, Orig., 1909, ii, 377) published a report of two successful inoculations of monkeys with the spinal cords obtained from two fatal cases of poliomyelitis. The injections were made into the peritoneal cavity. One monkey became paralyzed in the lower extremities and died on the sixth day after inoculation; the other was killed on the nineteenth day. In both, lesions of the spinal cord similar to those in man occurred. The disease could not be transferred to other monkeys. Since September they had secured suitable material from two cases of poliomyelitis in human beings. The patient in one case died on the sixth day after the appearance of the paralysis which affected the lower extremities; the lumbar cord was obtained in a sterile condition twenty-six hours after death and was inoculated into a monkey twelve hours later. The entire spinal cord was obtained in the second case twelve hours after death; the lesions were diffuse throughout the cord. Paralysis had been very extensive. In order to favor the transmission of the disease to monkeys, the brain was chosen as the site of inoculation, which was made under ether anesthesia through a small trephine opening. After the inoculation the animals were lively and normal. The injected material consisted of emulsions in salt solution of the spinal cord from the children, and later of the emulsion of spinal cord from monkeys developing the disease. Up to the present time the two viruses had been carried successfully through eleven series of monkeys, and it was regarded as highly probable that the transmission might be carried on indefinitely. Not only was the spinal cord active, but also the cortex of the

brain and still other organs might harbor the active virus. Not all monkeys developed the disease even when the inoculation was made into the brain. A delayed or unsuccessful inoculation with one virus might be converted into a successful infection by reinoculation with another and, apparently, more active virus. It could now be stated definitely that it was not absolutely essential that the virus be introduced into the brain, but that successful transmission was possible by way of the peritoneal cavity, by intravascular injection, by subcutaneous injection, and by intraneural injection. The lesions in the monkey in which the virus was introduced into the sheath of the sciatic developed first on the side inoculated and later extended to the opposite side of the spinal cord. It could not be affirmed that still other avenues did not exist whereby the virus might enter into the central nervous system. Additional observations were required before the statement could be ventured that infection might not occur by way of the skin, the respiratory passages, and the digestive tract. It seemed at the present time, however, that it was more difficult to effect infection through these channels. It was entirely clear, however, that no matter which avenue of infection was traversed the virus became established in the spinal cord and medulla, where it set up characteristic lesions which were followed by equally characteristic effects. Not all monkeys which developed the disease succumbed; a certain number recovered in a large measure from the paralysis. There tended to remain, however, residues of paralysis which resembled the paralytic effects persisting in human subjects of poliomyelitis. In their study of the nature of the virus responsible for producing poliomyelitis, they had failed utterly to discover bacteria either in the film preparations or in the cultures. Since, in the long series of propagations of the virus in monkeys, not one animal showed in the lesions the cocci described by some investigators and they had failed to find any such bacteria in the human material studied, they thought that they could be excluded from consideration. They had made a most painstaking study, but found neither bacterial nor protozoal parasites that could account for the infection. The readiness with which poliomyelitis could be transmitted to monkeys and the failure to find visible and stainable parasites in the lesions led to another line of investigation. It was known that the viruses of vaccinia and rabies, neither of which had been certainly demonstrated in films or sections, withstood the action of glycerin very well, while bacteria withstood it far less well. They, therefore, suspended the comminuted spinal cords of monkeys affected with poliomyelitis in glycerin, and after an interval of several days inoculated the glycerinated virus into normal monkeys. These monkeys developed paralysis and showed the characteristic microscopic lesions of epidemic poliomyelitis in the spinal cord and brain. To determine whether this effect was produced by the living virus or by an adherent toxic body, the cord of a monkey which developed

the disease after inoculation with the glycerinated virus was injected into a normal monkey which developed paralysis eleven days after inoculation. The lesions were characteristic. A series of experiments was then planned to determine the probable size of the organism producing epidemic poliomyelitis. The cord of a monkey which succumbed to the fifth generation of virus K was triturated with sterile quartz sand mixed with salt solution, thoroughly shaken and pressed through a Berkefeld filter. The clear and bacteriologically sterile filtrate was injected intracerebrally into a monkey which developed paralysis on the seventh day following inoculation. That this effect was due to living organisms, and not to soluble toxic bodies, had been shown by transferring the disease to healthy monkeys by means of the spinal cord obtained from monkeys that succumbed to a filtrate. From these experiments it would seem that the infecting agent of epidemic poliomyelitis belonged to the class of the minute and filterable viruses that have not thus far been demonstrated with certainty under the microscope. The virus had been shown to be present in the spinal cord and brain, but it had yet to be determined whether it was present in the blood and other organs. They had produced the disease in a monkey by injecting an emulsion of the regional (axillary and inguinal) lymphatic glands communicating with a nodule set up by a subcutaneous injection of the virus that had induced paralysis. Two other monkeys were inoculated at the same time, one from the spinal cord and the other from the local subcutaneous lesion. Both developed paralysis, but the latter after a longer interval. The blood taken at the height of the disease from an affected monkey, defibrinated, and injected into the circulation of a healthy monkey was capable of producing the disease. It had been determined that spinal cord from a human case of poliomyelitis retained its virulence apparently unimpaired on being kept constantly frozen at  $-2^{\circ}$  to  $-4^{\circ}$  C. in the Frigo apparatus for a period of at least forty days and also when kept for at least fifty days at a temperature of about  $4^{\circ}$  C. This indicates that the reduction in the number of cases occurring with the onset of cold weather did not depend upon the destruction of the virus, although it might have an effect on its multiplication. The spinal cord of a monkey still transmitted the disease after having been suspended for at least seven days over caustic potash in a desiccator. To determine whether the virus could be cultivated artificially, portions of a bacteria-free filtrate were inoculated into bouillon containing 10 per cent. of rabbit's serum which had been rendered perfectly clear and sterile. One cubic centimeter of a filtrate was mixed with nine cubic centimeters of the serum bouillon and incubated. On the second day the fluid in the upper half of the tube was cloudy; the turbidity increased, and on the fourth day the fluid was used for inoculating a monkey, which developed paralysis on the thirteenth day. A single loop of this turbid fluid did not set up turbidity in other tubes of

the same medium. A second series of cultivation tests had been made with human ascitic fluid bouillon to which clear filtrates prepared from the spinal cord of affected monkeys was added. In these turbidity developed in twenty-four hours or less and the turbid fluid inoculated into fresh clear tubes of the same medium caused them to become turbid. None of the turbid fluid contained bacteria that could be seen under the microscope or cultivated in nutrient agar, and the dark-field microscope showed no definite bodies. Experiments as to whether an attack of poliomyelitis recovered from afforded immunity to reinfection showed failure of the virus to act while it produced paralysis in the control monkeys. In seeking for facts relating to artificial protection from, or resistance to, infection, a considerable quantity of an emulsion of active spinal cord, which had been warmed to 55° to 57° C. for one hour, or 60° C. for one hour, was injected beneath the skin at the same time that the usual intracerebral injection of virus was given. The two monkeys employed in the experiment developed paralysis in the usual manner. Many guinea-pigs and rabbits, one horse, two calves, three goats, three pigs, three sheep, six rats, six mice, six dogs and four cats had had active virus introduced in the brain without causing any appreciable effect whatever. These animals had been under observation for many weeks. It was to be hoped that the experimental method would solve the question as to the mode of entrance and exit of the virus. In the beginning of the acute stage of the disease in monkeys the cerebrospinal fluid was much altered; it contained an excess of proteid, might coagulate spontaneously, and showed under the microscope many lymphocytes. The changes in the fluid depended upon the cellular changes in the membrane. Should it be shown that the cerebrospinal fluid contained the infectious agent of epidemic poliomyelitis, it might be considered probable that the virus passed from the cavity of the skull, by way of the lymphatics, to the nasopharynx, and that the buccal and nasal cavities were the sources from which the virus were distributed and into which it was received. In other words, that the nasopharynx bore the same relation to the spread of epidemic poliomyelitis as it did to epidemic cerebrospinal meningitis.

DR. L. EMMETT HOLT, referring to the clinical features of the disease as it appeared in the epidemic of 1907, stated that they were absolutely identical in symptomatology with those described by Dr. Lewis as occurring in monkeys. The etiology of poliomyelitis was a great puzzle. Small epidemics appeared in widely scattered areas, appearing quickly and disappearing as abruptly as they came. Two years ago, in an attempt to collect data of the various epidemics that had appeared previous to the one of 1907, he was able to learn of but thirty-five, and most of these were small epidemics, the reports of which in many instances were poor. Since that year more epidemics had been observed than in all previous time. An interesting question in regard to

this new aspect of this disease was that of its frequency; was it more frequent now than formerly or was it only more frequently recognized? Again, was epidemic poliomyelitis as it appeared to-day different from the sporadic form from the study of which our previous knowledge was obtained? Dr. Holt said that he was not at all certain that the differentiation was well defined between the sporadic and epidemic forms of the disease. He thought, however, that there had been much confusion in the diagnoses made and also that there had been a great and alarming increase in frequency, but he was not certain that the disease had changed its character. Was Landry's paralysis only a more serious form of the disease, but hitherto not identified as such? So, at least it now appeared to be. Dr. Holt wished to point out the necessity for more clinical research in poliomyelitis; much work should be done by those who saw the cases, especially in country cases where the association of cases could be determined with some degree of certainty. He called attention to the work the Massachusetts Health Department was doing; every case of poliomyelitis reported to it was investigated. To his own knowledge several epidemics of poliomyelitis had occurred in New York State during the past year. The State Board of Health should recognize poliomyelitis as one of the epidemic diseases and investigate its occurrence wherever it prevailed. The infectious nature of poliomyelitis had been believed in for five or six years. Dr. Flexner's researches had now demonstrated that this belief was correct. Was this disease also contagious? This was a matter about which they could not be certain, but the results of experiments as well as clinical observations pointed strongly in that direction. Dr. Holt referred to one instance in literature in which seven cases of the disease occurred in one family; five instances in which three were affected; three instances in which four cases occurred in one family; forty in which two were attacked. In thirty-seven of the cases mentioned the interval between the first and second cases was ten days or less. One might infer that the period of incubation was the same as had been found experimentally in monkeys. Further study of poliomyelitis, both clinical and experimental, could now be based upon definite established scientific facts, and it was to be hoped that future investigation of the disease would bring some tangible, practical results.

DR. THOMAS MORGAN ROTCH presented a paper on

THE CONDITIONS PERTAINING TO THE SAFEGUARDING OF EARLY  
LIFE FROM A PEDIATRIC POINT OF VIEW.

The writer first reviewed the work which he had already done on the establishment of an anatomic index representing the development of children in the first thirteen years of life and showed Roentgen pictures of their wrists. He then showed pictures of children taken from the elementary schools and gave

their heights, weights, school-grade, age, and anatomic index. An analysis of these data showed how with a high or low anatomic index as compared with their age the children could be graded so as to determine whether they were being forced beyond their resisting powers, or, on the other hand, could, if necessary, be pushed on into a higher grade. Professor Rotch also explained how important it was to determine the time when children should work in the mills; not by age alone, but by a combination of educational standards and age regulated by reference to the anatomic index as obtained by the Roentgen Ray. Illustrations were then shown of some of the southern children who were infected with the hook-worm, looking as though they were years younger than they really were and yet who, by means of their anatomic index, could, if proper laws of development were made, be prevented from working in the mills even though their age was far above that prescribed by the laws. Professor Rotch then spoke of the Roentgen work which by request of the United States Government he was having carried on at the U. S. Naval Academy for the purpose of aiding in the proper grading of cadets. He showed how with this object in view he was using the Roentgen ray to determine an anatomic index for older individuals at an age when they were in the Naval Academy, college, or the technical and high schools.

He stated that while his anatomic Roentgen index had for individuals from one to thirteen years been determined by the order of appearance of the carpal bones and the epiphyses of the radius and ulna, from A to M, he was now presenting merely the lines on which he was evolving the later age anatomic developmental indices. He wished it to be understood that this later index however was still merely empirical and not yet worked out as fully as the earlier index, but that there was no doubt but that this later index from N to Z could be evolved just as rationally as the earlier one from A to M. The method of establishing the later index was to determine the time and thus classify the individual by tabulating in each individual the appearance of the ossification or later union of the epiphyses of the metacarpal bones, the epiphyses of the phalanges, and those of the radius and ulna. He explained that this was not difficult from fourteen years of age up to eighteen or nineteen, but that after that period much finer Roentgen work would be needed to determine the completion of development by the arrangement of the striæ in the bones at their epiphyseal junctions.

Professor Rotch then showed illustrations of how the Roentgen picture would aid in deciding whether girls at the period of maturity should have their mental and physical work increased or decreased according as their anatomic index showed an advanced rigorous stage of development or an undeveloped condition irrespective of whether they looked well and were of the average height and weight.

He next showed the Roentgen pictures of a set of boys who had

entered college at eleven or twelve years of age and who were doing the same mental work as boys four or five years older. He explained how their anatomic index indicated whether they were safely undertaking this work beyond their years or not. In some cases the index showed that the individual was absolutely safe in doing such work and that one of the cases, a boy of fifteen, had been through Harvard and taken a *cum laude*, and was in one of the post-graduate courses with young men of twenty-two. Although seven years younger than his classmates his anatomic index showed a development so nearly that of the older individuals that there was evidently no question of his being harmed mentally. Other cases showed the reverse of these conditions.

Professor Rotch also presented the beginning of some work which he is undertaking on feeble-minded children where he has found that where such individuals may be of the average height and weight for their years, yet that their anatomic index corresponded more to their low grade of mental capacity than to such general physical development. He also gave instances of how from time to time taking the Roentgen anatomic index it was possible to determine whether the mental capacity was improving or standing still, this often in private practice being an exceedingly difficult question to answer the parents unless by some such aid as the Roentgen ray provides.

Finally he showed the Roentgenographs of some twins in which two girl twins showed exactly the same development. Two boy twins also showed the same development, but a twin boy and girl showed that the development of the girl was decidedly in advance of the boy. Professor Rotch stated that these cases supported his view that from birth the development of the girl's epiphyses were decidedly in advance of the boys and that they continued so throughout the whole of the child's life, the final union taking place in girls earlier than in boys. Some Roentgenographs of children infected by the hook-worm were presented showing the arrest of development in these cases and their low anatomic index.

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*Meeting of February 10, 1910.*

ELI LONG, M. D., *in the Chair.*

#### CASE OF INTUSSUSCEPTION.

Dr. EDWARD W. PETERSON presented this patient. When five months old he was admitted to the Babies' Ward of the Post-Graduate Hospital. Two days before admission he became very restless and fretful, and seemed to be suffering from abdominal cramps. Vomiting commenced early and continued at frequent intervals. The bowels, previously regular, did not act naturally, nor did enemata give relief. On the third day blood and mucus were expelled, unaccompanied by feces or flatus.

Upon examination, the abdomen was found to be moderately distended and very rigid. On the left side an elongated tumor could be felt abdominally and by rectum. The examining finger, when withdrawn from the rectum, was covered with bloody mucus. A diagnosis of acute intussusception was made and preparation for operation ordered.

A three-inch incision was made through the right rectus muscle. As soon as the peritoneum was opened the small intestines, much distended, crowded out. The diagnosis of intussusception was confirmed, the invagination being of the "ileocecal" variety. Beginning at the distal end, or at the apex of the intussusception, with great care the reduction was attempted. Owing to the edematous and friable condition of the gut, adhesions having formed at the neck of the intussusciens, it was very difficult to reduce the last two inches of the invagination. This was accomplished, however, with very little damage to the serous coat of the bowel. The abdomen was closed in layers with catgut and reinforced with three silkworm-gut sutures through all the layers except the peritoneum. Following the operation the temperature rose to 107.8° F., then gradually subsided, reaching normal about the fifth day. Vomiting was persistent and annoying for the first few hours, after which time it gradually stopped. The bowels acted naturally on the second day. The secondary enteritis, which is always present in intussusception cases, was not severe, and yielded readily to appropriate treatment. The patient was discharged cured on the seventh day.

#### CASE OF TUBERCULOUS PERITONITIS.

Dr. EDWARD W. PETERSON presented a boy, three years old. During February, 1908, the child had a severe attack of gastroenteritis, which lasted three weeks. Shortly after he very slowly lost weight and strength, and at the same time there was a gradual increase in the size of the abdomen. Several physicians examined the boy and informed the parents that the condition was a malignant one of the abdomen, and that the case was hopeless. Finally the child was brought to the Post-Graduate Hospital Dispensary in July, was examined by Dr. Carter, and referred to the surgical service.

The examination showed a weak and emaciated child. The conjunctiva and skin were jaundiced. There was a marked bronzing of the cutaneous surface over the abdomen, so marked as to suggest disease of the suprarenals. Examination of the heart and lungs was negative. The abdomen was moderately enlarged. There was a nodular mass to the left of the umbilicus, and distinct nodulations could be felt over the entire abdomen, most pronounced in the right iliac region. The blood examination showed erythrocytes, 2,360,000; hemoglobin, 55 per cent.; leukocytes, 8,000; polymorphonuclears, 33 per cent.; small lymphocytes, 60 per cent.; large lymphocytes, 7 per cent. The

urine showed a trace of albumin, hyaline and granular casts. The tuberculin (Calmette) test was tried and proved negative. (This test has since been abandoned as a diagnostic aid.) After studying the case for a few days they decided that they had to deal with a case of tuberculous peritonitis. Treatment by fresh air, tonics, etc., was tried for three weeks, but as the child lost two pounds in weight and was losing strength, operation was decided upon.

An incision two inches long was made in the abdomen, and Dr. Peterson said that he had never seen a more extensive case of miliary tubercles. A moderate amount of fluid was evacuated; this was a dark straw-colored fluid and suggestive of an old hemorrhagic condition. The parietal peritoneum, the intestines, omentum and other parts were simply studded with innumerable tubercles. The peritoneal cavity was washed out with peroxide of hydrogen, one part of peroxide to three parts of water, then with normal saline solution, and the wound was closed without drainage. When the child left the hospital, the parents were instructed in regard to the hygienic and tonic treatment that should follow. In addition inunctions of mercury were employed. Within three or four weeks the jaundice cleared up, and the bronzed condition of the cutaneous surface of the abdomen disappeared. The child to-day was apparently perfectly well.

DR. JOHN F. ERDMANN read a paper on

#### INTUSSUSCEPTION.

As the surgical technic of this class of cases is not the essential feature for a Section on Pediatrics, he said he would but emphasize the operative necessity and call attention to the symptoms, differential diagnosis, etc. In his series of operations, now about forty-five, he had been impressed by the health of the patients, few having been ill in any way before the onset of the trouble. There was the sudden onset with colicky pain, accompanied with shock; this primary onset was then followed by cramp-like pains, intermittent in character. During the periods of cramp the child cried and was restless; while in the intermission during the first twelve or twenty-four hours, one was surprised at the temerity of the diagnostician who was rash enough to suggest an abdominal section. The early shock disappeared as the first hour passed. The diapers were very likely to be slimy and contain an admixture of blood. This evidence of blood was pathognomonic when there was a previous colic, shock, and spasm picture. The blood evidences might be slight and with large quantities of mucus, or the reverse might obtain. Frequent desire to defecate, tenesmus with little result except small quantities of mucus and blood, vomiting, and distention of the abdomen were later developed in the order mentioned. Palpation, even under an anesthetic, was not followed in the majority of the cases by the finding of a tumor, and certainly

not the classical sausage-shaped ones described in the text-books; one was more likely to find no tumor from the fact that very often the tumor was hidden behind the costal arch of either side. Rectal examination revealed a tumor far less often than abdominal palpation, unless the case be one of a day or more duration; but, as a rule, withdrawal of the examining finger was followed by blood and mucus. The abdomen was lax in the early hours, but subsequently became distended. The pulse was accelerated. The temperature was usually subnormal or normal at the onset, but a moderate rise ensued with the progress of the disease. The differential diagnosis of these cases was sometimes extremely difficult, especially in those cases with visceral crises in the erythema group of skin diseases. Little or no difficulty should be met with in making the differential diagnosis in a case of appendicitis; in these cases the pain was a general one with a localization, with temperature and pulse higher than in intussusception.

In considering the treatment he inserted, with a few alterations, a portion of paper published in the *New York Medical Journal* in May, 1904.

"Rectal enemas in the first few hours are not productive of harm, but may, though rarely, be followed by reduction.

"Admitted that one meets occasionally with reduction by the use of enemas, nevertheless, this very important fact must be remembered, *i.e.*, that the whole mass may be reduced except the ileo-cecal junction and one or more inches of the ileum. This being so, all the symptoms clear up for a time. They again return and necessitate operative interference at a time when the conditions of this region are not nearly so favorable to reduction, and may even require excision. This condition was well demonstrated in my sixteenth case, a male child, seven and a half months old. Duration eight and three-quarter hours. Injection used by the father, a leading physician of this city, Dr. H. M. Silver and myself, was followed by a perfectly tranquil picture; but realizing the possibility of this condition of incomplete reduction, we all felt that the risk of exploration would be far less than that taken by leaving matters rest for further manifestations. That our fears were not groundless was proved by the evidence of a mass at the cecum, which consisted of almost three inches of the ileum and the entire appendix. Reduction was readily accomplished, the appendix was removed, and recovery followed. I should, therefore, not feel satisfied that reduction had taken place, even if the child should have no further manifestations of pain, etc., unless this was followed in a short time by a movement of the bowels that we could feel satisfied had come from beyond the supposed site of the intussusception; and that in the waiting interval for a movement we should be prepared to proceed at a moment's notice with the operative measure. The use of enemas previous to operation was offered as a suggestion, but I can say clinically that it is of

very valuable service, as there is no doubt that the injections reduce a portion of the intussusception, and any agency or procedure that limits operative time must of necessity diminish shock in direct proportion. Although these little patients bear operative interference quite well, it is quite significant that my greatest mortality rate occurred in those cases which required the longest time for reduction, and that these cases were also the ones of longest duration. Enemas as a means of reduction are not advised after six hours' time has elapsed from the first positive symptoms, as, after this period, much valuable time is lost by such procedure."

In Dr. Erdmann's last sixteen cases of operative reduction the average age was six and a half months, the youngest being sixteen weeks old, with males in excess. One of these sixteen died, the cause, in all probability, being status lymphaticus. All his excision cases in children succumbed.

In conclusion Dr. Erdmann said that early recognition of this condition was absolutely necessary to a high recovery rate. Inflation was decidedly not useful, but dangerous. Enemas were successful in an exceedingly small proportion of the cases, and should not be used after six hours. The earlier the operation, the more likelihood of a small mortality. Late operation predicated the possibility of gangrene, with all its horrors.

DR. CHARLES N. DOWD read a paper on

#### APPENDICITIS IN INFANTS AND CHILDREN.

Appendicitis in children offered many peculiarities; he could not consider all, but wished to refer to a few points which hinged about two questions, 1. when to operate and 2. how to operate? It was easy to say, operate at once, but this depended upon the diagnosis, and the diagnosis of appendicitis in children was very difficult. In adults the diagnosis usually could be made promptly and a successful result obtained; whereas in children there occurred repeated consultations with delay and often a general spreading peritonitis with a fatal result. Murphy of Chicago had called attention to four important symptoms in acute appendicitis which followed as a sequence; if they did not follow as a sequence, the diagnosis of appendicitis might be questioned. First, pain in the abdomen, sudden and severe. Second, nausea or vomiting, usually three or four hours later. Third, abdominal sensitiveness, most marked in the appendicular region. Fourth, moderate elevation of temperature from two to twenty-four hours after the onset of the pain. The first, second, and fourth symptoms were of little significance in children except as confirmatory of the third. Therefore, one was easily misled in making a diagnosis of appendicitis in children. One must depend mainly upon the third symptom in making such a diagnosis. Muscular rigidity which indicated this tenderness was as definite in children as it was in adults. It was not,

however, so definitely localized since children's appendices were relatively longer than adults, and the rigidity would vary with the position of the appendix. It would be in the hypochondriac region if the appendix lay upward; it seemed like a general abdominal rigidity if it lay toward the median line. The rigidity was less marked if the appendix lay in the pelvis, since the bony parts protected it from traumatism, but one was helped here by the occurrence of bladder irritability. This one symptom of vesical irritability was, in many cases, a very valuable guide in determining the diagnosis. It was easy to see that if only the ordinary symptoms of appendicitis were considered they had a much more difficult problem in children than in adults. There were several distinct inflammations which were apt to make a differential diagnosis difficult and among these were the following:

1. *A Beginning Pneumonia*.—Occasionally adults with a commencing pneumonia will give symptoms very suggestive of an appendicitis. But in children this occurred frequently; such a diagnosis was frequently made in children who were sent in to St. Mary's Hospital with beginning pneumonia, but soon the rapid respiration, the peculiar appearance of a child ill with some thoracic disease, and the absence of other classical signs point to the real trouble in the lungs, and operation was avoided. But those cases were very misleading.

2. *General Peritonitis from Unknown Causes*.—Children were very apt to have a spreading peritonitis from an unknown site of infection. Holt and Kerley had described it. Dr. Dowd had recently published a paper on the subject in the *Annals of Surgery*. The condition caused a very rapidly spreading peritonitis usually with a fatal termination. This was found more often in children than in adults, and it constituted one of the traps which awaited the diagnostician.

3. *Tuberculous Peritonitis*.—This was common in children and often simulated appendicitis; it was usually the form with a plastic exudate, and not the ascitic form as found in adults.

4. *Pneumococcus Peritonitis*.

5. *Gonococcus Peritonitis*.

6. *Cyclic Vomiting*.—This often gave symptoms very much like those of appendicitis. It was interesting to note that Comby of France operated upon many cases believing the condition to be due to a chronic form of appendicitis, and a large proportion of his cases had been cured by the operation.

7. *Foreign Bodies*.—Dr. Dowd said that he had taken three pins, for instance, from the appendix. In one instance he found a round worm free in the peritoneal cavity with no indication of its point of exit from the intestine.

8. *Hip Disease*.

In looking over this list it would be shown that the diagnosis of appendicitis in children presented more difficulties than it did in adults, especially when one remembered the lack of history

in the case of the infants. But really the diagnosis of appendicitis in children was not so difficult as the long list indicated.

When the diagnosis of appendicitis had been made the question then arose when to operate. Whatever opinion one might have in regard to this question in adults, when dealing with children all ideas of delay should be thrown aside; so soon as the diagnosis was made, operate. Children were more apt to have a spreading peritonitis with appendicitis than were adults. Ochsner said there were two classes of people (?) who from the thinness of the omentum were apt not to have their appendicial inflammations shut in; 1. old emaciated adults and 2. young children.

Dr. McCosh once read a paper in which he advanced the same idea as did Dr. Ochsner. Operate as soon as the diagnosis was made; this should be written down as a general rule in dealing with appendicitis in children.

With regard to the mortality, it was once very high. Rotter reported having lost 66 per cent. of six cases under five years; Isreal lost 47 per cent. of fifteen cases; Broca lost 44 per cent. of fifty-nine cases; Kerewski lost 41 per cent. of seventeen cases; Senander lost 25 per cent. of four cases; and Sonnenberg lost 15 per cent. of twenty-six cases. Last year George Alsberg reported sixteen cases occurring in children without mortality. The following was Dr. Dowd's own table: \*

*Time of Operation and Mortality Rate.*

	No. of cases.	Early date.	Later.	Interval.	Mortality rate.
Group 1,	70	15.7	57.1	27.1	10
Group 2,	50	16.0	74.0	10.0	8
Group 3,	61	36.1	49.2	14.7	0

Murphy of Chicago made this statement: "A man who is having more than three or four deaths in a hundred operations for appendicitis is either receiving his patronage from incompetent and procrastinating medical men, or is doing too much manipulating in the peritoneal cavity under unfavorable pathological conditions." This statement brought in two essentials of success in appendix work.

The second, simplicity of operation, was as important as the first, promptness in operation, and it was remarkable to note how generally a simple technic had been adopted, removing the appendix when practical, draining the local abscess and leaving the rest of the peritoneal cavity to care for itself. And even the removal of the appendix should not be done at the primary operation if too extensive treating of adhesions are necessary in order to accomplish it.

With regard to the age, a child under two years would not stand as good a chance as one over two years; yet these young children would do well if one was able to make an early diagnosis and did not attempt to do too much at the operation.

The following was Dr. Dowd's own table:

	Under five years.	Five to ten years.	Ten to fifteen years.
Group 1,	5.7	41.4	52.8
Group 2,	6.0	38.0	56.0
Group 3,	11.4	32.8	55.7

Children had a great capacity for getting well if they were given a chance. It was the difficulty of diagnosis rather than the question of operation which made the mortality rate so high for little children. They stood the simplest operations wonderfully well.

#### DISCUSSION.

DR. EDWARD W. PETERSON believed that there was no type of intestinal obstruction so easy to diagnose as intussusception. An acute invagination usually manifested itself in a subject whose previous health had been good. The onset was sudden, with severe paroxysmal colicky pains, vomiting and straining, and muco-hemorrhagic stools. There was constant desire to go to stool, with a passage of mucus and blood, without feces or flatus; this was pathognomonic of intussusception. If, in connection with the symptoms just mentioned, a cylindric or rounded intestinal tumor could be felt, then the diagnosis was rendered reasonably certain. It might be added that in cases of intussusception, a careful examination of the abdomen and rectum, under an anesthetic if necessary, would generally reveal the presence of a tumor. Dr. Peterson said he had operated upon nine cases and had seen as many more, and in every case a tumor could be felt. In intussusception the prognosis was going to depend not so much upon the duration of the affection as upon the amount of obstruction and the degree of strangulation to the blood supply of the invaginated gut. He agreed heartily with the recommendations for treatment as outlined by Dr. Erdmann.

In discussing Dr. Dowd's remarks he said there was no question about the difficulty of making a diagnosis of appendicitis in infants and young children. He was surprised at a mortality of 30 per cent. given by a certain Brooklyn surgeon in discussing the subject. In the wards of the Post-Graduate Hospital he had lost but one case during the last seven years; children stood the operation remarkably well, if one was careful not to attempt too much.

DR. GODFREY R. PISEK said that one method had not been referred to, a method of great help in diagnosing appendicitis in infants and children, *i. e.*, rectal examination. Children stood this well, and the finger could readily be passed into the rectum and a tender or enlarged appendix or an abscess could be palpated and located, especially if the bimanual method was used. This was a method that had not been employed as often

as it should be. In suspected cases, or in cases in which there was difficulty in making an exact diagnosis, this would be of great help.

With regard to cyclic vomiting he recalled the case of a child of a physician who had this symptom-complex and who was operated upon for a subacute appendicitis. Since the operation she had become much improved, and under the same treatment as before the operation. This was in accord with Dr. Dowd's statement, that sometimes after an operation for appendicitis the cyclic vomiting in many cases disappeared.

DR. SARA WELT-KAKELS had been impressed with the fact that sometimes in these cases of intussusception there were not always evidences of pain, muco-hemorrhagic stools, and tumor in the abdomen, and she believed the general practitioner, in treating cases of gastroenteritis, should think of the possibility of intussusception, even in the absence of some of the well-known cardinal symptoms.

The doctor remembered one case which occurred in her experience over a year ago in the Mt. Sinai Dispensary. A child was being treated for gastroenteritis; the mother did not think the child was improving and asked for admission to one of the best hospitals in the city, but was refused admission. She then brought the child to Mt. Sinai Dispensary, and one of Dr. Welt-Kakel's junior physicians asked her to examine the child; this she did and by rectal examination a diagnosis of intussusception was readily made. Within an hour and a half the child was on the operating table. A loop of gangrenous intestine was found, a resection was performed, but the child died twenty-four hours later.

DR. WILLIAM P. NORTHRUP taught his students that there were three things they should always be keen about and which they would meet often from the time of graduation until they quit their calling; they were, the diarrheal diseases of summer, the corresponding illness of winter, pneumonia, and intestinal obstruction.

In speaking of intussusception Dr. Northrup felt like apologizing for a paper he published some time ago. The cause for the production of that paper was this: He saw two cases of intussusception within two weeks, and both were injected with water, and both got well, and he believed that this was the worst thing that could have happened to him. One of the cases Dr. Neff saw two hours after the onset of the trouble; the baby had sharp colicky pain; the baby was relaxed, pale, and in the flaccid condition characteristic of shock; a sausage-like tumor was also felt below the border of the ribs. Six hours later Dr. Northrup saw the case and suggested rectal injection to see if any blood followed. They got blood. The mother had in the bath-room a complete douch outfit. They distended the bowel, but the tumor persisted; they repeated it; again they filled the baby with water and then the mass unbuckled.

Two weeks later they had a similar case with similar symptoms, similar treatment, and a like result. The results in these two cases Dr. Northrup believed was the worst that could have happened to him. He published the results of these two cases. He said that he had learned better since. He preferred surgical incision.

One night Dr. Northrup went to the Presbyterian Hospital and was seen standing at the door of the examining-room, and was asked in because of an interesting case there. He found a strong looking, husky youngster with symptoms of intussusception, but they were not characteristic. He had had attacks of colicky pain, and some blood was found on the cloth on which he was sitting. There was doubtful history of vomiting. A tumor could not be found. However, when ether was given the so-called characteristic sausage-shaped mass was noted extending across the abdomen. The question arose, shall we inject water, or shall we call in the surgeon? They sent for the surgeon, and the patient was all right now. An incision was made and the gut was drawn out with much difficulty, especially the last of it.

Among the causes of intestinal obstruction, fecal impaction had not been referred to, and Dr. Northrup related an interesting case. These cases were quite rare and often hard to understand. This child was a robust youngster with an inordinate appetite, swallowing great quantities of food; once he indulged in almonds and meat. Soon he began to have pain, obvious peristalsis, and he vomited and vomited and vomited. He got on his hands and knees because of the pain, and of course he could not sleep. What was the cause? For three weeks he went on in this way. What was the diagnosis? Dose after dose of castor oil was given, and each dose was followed by a watery discharge. Finally a practitioner said, "Give him rhubarb and soda; if without effect, give it again and again." This was done and one day this child passed a large, rotten, putrid bolus which contained among other things almonds. The baby had been well since.

He recalled an instance when Dr. McCosh being busy asked Dr. Northrup to see a case for him. The child had a little fever and had had some vomiting. There was tenderness in the right flank. When the bladder was empty the patient complained of pain; but when the bladder was full no pain was complained of. There was nothing to be found along the genito-urinary tract. There was a great deal of pain. The diagnosis, however, was not difficult to make. The appendix was in an abnormal position, for some reason becoming warped around that viscus, and there was found an abscess. The filled bladder caused no pain; but when the bladder was emptied, the dragging produced caused the pain. The diagnosis was made of an appendicitis with the appendix behind the bladder.

DR. NORTHRUP reported another case in which the appendix was in a wrong position, tucked up behind the cecum.

DR. CHARLES N. DOWD closed the discussion. With regard to the leukocyte count, this was in his experience a very indefinite guide, for there were so many variations that it was hard to be guided by it. He said he had operated upon abscesses where there was a 3 per cent. polymorphonuclear count; in several cases where there was a low differential count, and occasionally there was a low leukocyte count; whereas in very many cases where there was no discoverable lesion there was a high leukocyte count. One had better forget what was said about the leukocyte count and be guided by other things. Probably in the majority of the cases the leukocyte count would correspond with the condition found; but there were so many exceptions that he could not interpret and he did not know anybody who could.

The presence of calculi was another one of the traps in diagnosis and which might very easily mislead one. He said he had never seen a ureteral calculus occurring in a child, although since calculi occurred in the bladder he supposed they also occurred in the ureter.

Rectal examinations he had never found as valuable as the abdominal examinations although he regularly made them. The abdominal muscle was a tell-tale, and he could find no structure by rectal examination which gave an equal amount of information.

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## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Cremasteric Reflex.**—E. M. Corner (*Brit. Jour. Child. Dis.*, Nov., 1909) says that the cremasteric reflex appears in the second year of life. Rapid acquisition of the reflex would seem to indicate a precocious nervous, not sexual, development. Its slow acquisition would indicate either a slow nervous development or the presence of some general or local disease. When it has once appeared the reflex rapidly becomes brisk, perhaps so brisk that the testicle, which was originally in the scrotum, ascends and appears to be imperfectly descended. An abnormally brisk cremasteric reflex is the cause of the apparent imperfect descent, occasional disappearances, and the great mobility of testicle often seen in young boys. From the ages of about eight to twelve it is quite common for the reflex to become more sluggish and feeble. With the onset of puberty the cremasteric act returns to something like its former power and extent, but never to the same degree as it is present in boys about six or seven. Later in life it becomes lost again. It may be produced by stimulating the crural branch of the genitocrural nerve, branches of the internal cutaneous nerve, of the middle cutaneous nerve, occasionally of the external cutaneous nerve, frequently by stim-

ulating nerves supplying the inguinal region or the side of the abdomen, sometimes stimulation of the perineum and anal region or of the prepuce and skin of the penis. As a general rule, movement of the testicle of the side stroked is the result of the stimulus. But it is not at all infrequent to find that there is unequal bilateral response, less frequently an equal bilateral response, and still more infrequently, unilateral response of the testicle of the opposite side. In girls a reflex contraction of the lower fibers of the internal oblique muscle can be produced by stimulating the thigh, lower abdomen, or external genitalia. The writer suggests the name, "inguinal reflex." It appears in the second or third year of life, is often very brisk in girls of six to eight years of age and disappears shortly after puberty, when it becomes merged into reflex contraction of the lower abdomen. There are unilateral, equal and unequal bilateral and crossed responses, just as with the cremasteric reflex. The reflex is best in healthy children. It is weakened or abolished in ill-health. It has therefore some value in detecting or in confirming the detection of malingering children. In the early stage of rickets the cremasteric reflex is much weakened and often abolished. All operations on the inguinal canal temporarily abolish this reflex. If the inguinal canal has been sutured, it may be stated that—(a) if the reflex returns in ten days or a fortnight some of the stitches in the canal have not held; (b) if the reflex is abolished for more than four weeks, the wound healing by first intention, the spermatic cord has been injured or there is deep suppuration; (c) if the reflex returns two or three weeks after the operation its return is about normal. It is sometimes a question of diagnosis and of importance in prognosis and treatment to decide if the imperfect descent of the testicle is due to—(a) lack of developmental capital, when the reflex is weak or absent; (b) to some mechanical obstruction, when the reflex is strong; (c) or associated with the condition of movable testicle, arising from an abnormally brisk reflex dependent on the summation of stimuli or on a tonic contraction of automatic origin. In such cases there may be no cremasteric reflex. They may be only separable from class (a) by careful observation and the avoidance of stimuli, as by lying in bed with the clothes raised by a cradle. An inguinal reflex, comparable to that of young girls, can be found in males in whom the testicle is retained in the abdomen. It has some practical value, as if the testicle cannot be found it is either a movable testicle or an imperfectly descended testicle; in the former case there may be no inguinal, but a cremasteric reflex; in the latter it is present with an abdominal testicle.

**Different Aspects of Infantile Surgery According to Age.**—Kirmesson (*Bull. méd.*, Nov. 13, 1909) says that surgery among children is different in some respects from that of adults. It can be divided into two great chapters: they are defects of formation and diseases of the locomotor apparatus. Deformities include club-foot, spina bifida, harelip, and imperforate anus,

all of which are found in the new-born. There are many streptococcic infections to which the tender skin of the infant is especially liable. Such are erysipelas of the navel, gangrene of the scrotum, osteomyelitis, and streptococcic arthritis, besides affections of the skin of the same origin. Conditions vary with the age of children. Among children under five years of age dislocations are rare, while after that age those of the hip and wrist occur. In young infants fracture of the femoral diaphysis results from slight causes. On the other hand, fractures of the leg and arm are rare. In early infancy the epiphysis is cartilaginous, and its elasticity permits it to avoid traumatism; in later childhood and adolescence are found most of the traumatisms of the epiphysis. Invagination is peculiar to young infants, the symptoms being violent colic, signs of obstruction, and passage of bloody mucus. Appendicitis occurs only later in childhood. In hernia strangulation is rare in babies, the apparent strangulation being due to spasm, which is easily relaxed under chloroform. Infectious osteomyelitis may be seen at all ages. Over five years, it involves the tibia; while under five, it is frequent in the lower extremity of the femur. When this begins at an early age it causes inequality of the condyles, and genu valgum of pronounced degree. In later childhood it invades the region of the diaphysis and large suppurations of the shoulder and hip occur. In young children tuberculosis generally involves only one location, while later the foci are multiple. Cancers are rare in children, while gliomata are much more frequent.

**Use of Morphine in Acute Spasmodic Affections of the Larynx.**—Delearde and P. Swynghedauw (*L'Echo med. du Nord*, Nov. 7, 1909) give an account of the flattering results of various authors in the use of morphine for spasmodic respiratory diseases and of the criticisms of others whose results were not so good. They then give an account of their own observations: four cases of false, and eleven of true croup. In croup there were three positive good results, six without result and two bad results. Of false croup two good, and two bad results. They conclude that morphine does not give as brilliant results as have been promised. Still it is well to try it before operating. It should never be given in children who have in addition to the spasm any respiratory affection; the dose of 0.003 of morphine should never be exceeded; hot baths, compresses, and vapor inhalations, with rest in bed and a mixture of antipyrin, bromide of potash, valerian, and belladonna in a suppository should be given in addition. Massive injections of diphtheria antitoxin should be added in diphtheritic cases.

**The Heredo-syphilitic Cry.**—Genaro Sisto (*Ann. de méd. et chir. inf.*, Nov. 1, 1909) tells us that in many heredo-syphilitic infants there is a peculiar cry appearing in the third or fourth month of life: continual, tenacious, persistent, especially at night; exaggerated by movement and pressure on the cartilages

of the bones; persisting in spite of changes of diet and régime, and disappearing when syphilitic treatment begins. Sometimes there are no other manifestations of syphilis; at others there are enlarged spleen and liver, specific facies, and other signs of the disease. Not only does mercurial treatment stop the cries, but it improves the condition of the child which begins to gain flesh and regains calm sleep. The author believes that the cause of the cry is pain in the cartilages which are inflamed by the action of the specific virus. Bertarelli localized the spirochetes in the periosteum and cartilages of syphilitic infants.

**Wassermann Reaction with Milk.**—Oluf Thomsen (*Berl. klin. Woch.*, Nov. 15, 1909) says that up to the present time no tests have been made for the Wassermann reaction with human milk. He has made tests with women who were waiting for confinement in the Copenhagen Woman's Hospital the results of which are given in the form of tables. The milk of syphilitic women often gives a positive reaction with the Wassermann test, even when their blood serum fails to do so. This reaction continues undiminished for several days after labor, but disappears after five or six days if suckling begins. If the child is not nursed the reaction continues unabated for seven to fourteen days after labor, and then ceases to be positive. During the last few days of pregnancy the reaction is also obtainable. The milk of non-syphilitic women will also give a slight reaction with this test. The value of this test for milk in prognosis and diagnosis is not yet determined, but it is a significant fact that it requires but a small amount of milk to get the reaction.

**Swelling of all the Lymph Glands with Rötheln.**—F. Homberger and O. Schey (*Münch. med. Woch.*, Nov. 9, 1909) describes an epidemic of rötheln observed by him in which the symptoms were very slight, yet in which there was a general swelling of the lymphatic glands. It has been stated that a swelling of the occipital and mastoid glands is characteristic of this disease, but in these cases the swelling was general in spite of the mild character of the symptoms. This swelling is present in the prodromal stage of the disease. The epidemic observed consisted of forty-five cases in all. The author thinks that whenever we have a general swelling of the lymphatic glands we should be on the lookout for rötheln.

**Surgery of the Thymus.**—Victor Veau and Eugène Olivier (*Arch. de méd. des enf.*, November, 1909) writes that sudden death is a not infrequent termination in hypertrophy of the thymus. In other cases there are marked and peculiar dyspnea, and spasm of respiration, which is quite characteristic of this condition. The authors have collected seventeen cases of operation for hypertrophy of the thymus, from which they deduce operative indications and a surgical technic. The signs of hypertrophy are permanent dyspnea, crises of suffocation, and stridor; the dyspnea is caused by pressure of the enlarged thyroid on the trachea and the respiratory nerves. The type is different from

that of croup; at each inspiration the abdominal contents are crowded back by the muscle, the sternum being thrown forward. Crises of suffocation may occur in a patient who is apparently perfectly normal, or they may be frequently repeated until the patients fear death. These troubles are relieved by sitting up, and return on lying down again. Intubation does not relieve this form of dyspnea. Inspiratory congenital stridor is always due to hypertrophy of the thymus. Dysphagia is sometimes present. The physical signs are swelling in the location of the thymus, and sensation of a mass above the sternum. Radiography and radioscopy are difficult and of little value in a child struggling for breath. Exothymopexy, or raising the thymus and fixing it to the sternum is of little value as a remedy for this condition. It is easier to extirpate the thymus than to fix it; we need not fear total removal, because the gland is so situated that it is difficult not to leave some behind. Removal in the capsule would be difficult on account of its relations and the difficulty of dissecting out the entire capsule. Subcapsular enucleation is not difficult. The thymus is easily removed by pulling out with forceps and cutting off one lobe at a time. The immediate results are good, there having been sixteen recoveries in the seventeen cases, the death being in a case of delayed operation. No bad results from removal have been observed.

**Bismuth Paste Treatment of Tuberculous Diseases.**—J. Ridlon and W. Blanchard (*Chic. Med. Rec.*, Nov., 1909) have treated over 100 cases in this way with no serious case of bismuth poisoning. They say that it should never be used if there is progressive destruction or the X-ray shows a sequestrum, in amyloid cases, or continuously when large distal pus sacs become filled with residuary bismuth. In sinuses of tuberculous bone disease which have existed for less than two or three months, it is likely to burst the walls and extend the sinuses, and in old sinuses with extensive skin destruction and undermining of large areas of skin the sloughing is increased. The ideal paste for flooding tubercular sinuses and filling pus cavities should sufficiently solidify at body temperature to crowd out the pus, compress the granulations, and exclude the air. It should also be nontoxic and absorbable. To avoid danger of bismuth poisoning and believing that bismuth is not a necessary constituent of a flooding paste, the writers have adopted the following formula for the treatment of old tubercular sinuses: White wax, one part; vaselin, eight parts, mixed while boiling. To this is added for use in badly infected cases from 0.1 to 0.5 per cent. of powdered iodine at moment of injection. Iodine scales may be reduced to a powder in a mortar by the addition of 20 per cent. of potassium iodide. Immediately after injecting, a thick pad of gauze saturated with alcohol should be bound over the opening. The evaporation of the alcohol cools and hardens the paste and prevents its escape. A limited experience with wax and

vaselin paste either with or without the iodine seems to show just as good results as the bismuth paste.

**Typhobacillosis of Landouzy and Late Localizations of Acute Tuberculous Infection in the Child.**—E. Weill and G. Mouriquand (*Presse méd.*, Nov. 26, 1909) describe a case of typhobacillosis, in which the child was supposed, from the general symptoms and rise of temperature, to be suffering from typhoid, but in which there were no rose spots and no positive Widal reaction. Later a pleurisy developed, and it became evident that the case was one of tuberculosis. The spleen may be enlarged, but less so than in typhoid. Palatine ulcerations are absent. The pulse is independent of the rise of temperature. In tuberculosis, at first the temperature is like that of typhoid, but soon greater oscillations appear than would be expected in that disease. It is not always very high and it does not seem to disturb the child. Then the child begins to emaciate and to get weaker in spite of a good appetite. Finally the lung signs appear and bacilli may be found in the sputum, or a meningitis or a tuberculous peritonitis may develop. The location renders the prognosis fatal.

**Tuberculosis of the Tonsil and Cervical Lymph Nodes.**—E. S. Carmichael (*Proc. Roy. Soc. Med.*, Nov., 1909) has examined the tonsils removed from fifty out-patients of the Royal Hospital for Sick Children, most of whom were brought on account of glandular enlargement. Seven of these showed undoubted tuberculosis of the tonsil, though none of them suggested the trouble to the naked eye. The writer questions whether, if the tonsils are primarily affected and have been the cause of a secondary infection of the cervical glands, the general opinion is the correct one—that excision of tuberculous glands in the neck is sufficient, with the chance of leaving the original focus un-attacked.

**Gastric Ulcer.**—The great rarity of ulcer of the stomach in children and the much greater rarity of such cases coming to operation are the reasons given by F. B. Lund (*Bost. Med. Surg. Jour.*, 1909, clxi, 930) for recording a case only eight years of age. The boy had had two previous attacks of epigastric pain with slight hematemesis within a year. In the third attack these were accompanied by symptoms of subacute perforation. Laparotomy revealed a large indurated ulcer just to the left of the pylorus on the lesser curvature firmly adherent to the liver. A posterior gastroenterostomy was performed with a short loop. Recovery was practically uneventful, and he has remained in good health for nine months.

**Latent Chorea.**—In discussing this affection Reginald Müller (*Lancet*, Dec. 18, 1909) states that (rheumatic) chorea declares itself first by symptoms significant of general nervous instability. In dealing with children suffering from nervous disorders of many kinds special care should be taken to exclude the possibility of their having originated from a slight rheumatic infection. The well-known association between rheumatism and nervous insta-

bility is not to be explained by considering that the infection is specially prone to attack neurotic children, but by regarding the nervousness as in most cases the outcome of an infection already present (latent chorea). The mental depression and headache in rheumatic children are usually to be attributed to the disease and not to its treatment by salicylates. The recognition of latent chorea in children suffering from obvious acute rheumatism affords strong evidence that chorea is a rheumatic condition.

**Contribution to the Treatment of Scoliosis—Auto-Modeleur of Mencière, with Pneumatic Pressure.**—Louis Mencière (*Arch. Prov. de Chir.*, Sept., 1909) states that the treatment of scoliosis is based on progressive mobilization of the spine and thorax, progressive *redressement forcé*, and fixation by an appropriate apparatus, with modeling of the thorax by pneumatic pressure and respiratory gymnastic exercises. The thorax of the patient is placed, during the exercises, in an apparatus which models it, an essentially active process. While respiratory movements are being made the thorax is induced to change its form and size by pneumatic pressure, continued and elastic. To accomplish this a cast of the thorax is made with pads over the depressed portion, from which a positive in plaster is made with a space over the depressed region, and a pneumatic pad, which can be inflated from a compressed air apparatus over the prominent region. From this a modeling apparatus is made such that a pneumatic cushion gives pressure upon the projecting portion of the thorax and the depressed portion is allowed space to expand. This apparatus follows the movements of the thorax in respiration owing to the elasticity of the gas in the pneumatic cushion. In this apparatus the patient takes active breathing exercises. The gymnastics assure a dilatation of the thorax and increase of its antero-posterior and transverse diameters, while the apparatus supports the thorax and abdomen. The head must be in extension. This is obtained by hanging the child from a head sling during the exercises. The arms are exercised by rings suspended on pulleys. The passive part of the treatment consists of manual or instrumental *redressement forcé*, mobilization of the spine, and mechanotherapy. In scoliosis parts of the lungs are not used in respiration and these lose their function, which causes partial ankylosis of the costo-vertebral articulations. The respiratory gymnastics fill these unused portions of the lungs and mobilize the articulations. Nasal obstruction plays an important part in noninflation in scoliosis. All these exercises should be carefully supervised by the physician.

**Internal Contagion in Hospitals for Children.**—P. Chatin (*Lyon méd.*, Dec. 5, 1909) says that the frequency of the occurrence of contagious diseases in hospitals for children that are not intended for such diseases is appalling. Diseases that are simple when occurring at home are fatal in many cases in the hospital. Measles in the Charity Hospital at Lyon attacked

100 patients of whom twenty died. Of these cases forty-one might be considered as brought into the hospital, while the other fifty-nine acquired the disease there. Of forty-four cases of scarlatina six died. Only thirteen or fourteen brought the disease in with them. Bronchopneumonia is another disease that is brought in and causes many deaths. The special wards for scarlatina, measles, etc., do not seem to have put an end to this trouble. The author believes that the only way to do so is to have wards in which each patient has a special compartment into which he is received and where he is isolated for a sufficient length of time to have passed over the incubation of these various contagious diseases. This method has been attempted with success at several hospitals, and it would be well to see it introduced in every hospital for children.

**Treatment of Inguinal Hernia in the Child.**—Ch. Dam (*Gas. des. hôp.*, Dec. 14, 1909) says that surgical intervention is always the proper treatment of inguinal hernia in the child, regardless of age or sex, provided that the condition of health will permit of an operation. The prolonged use of a bandage has many disadvantages. It causes irritation of the skin, even ulceration, atrophy of an already weak muscular structure, and prevents the child from engaging in the sports of his age. Mental depression results. The pressure of the bandage causes the formation of adhesions between the cremaster, the sac, and the elements of the cord, and leads to the formation of cysts of the cord. Finally atrophy of the cord occurs. If cure follows the use of the bandage is often only temporary, and operation becomes necessary later. Intestinal stasis causes inflammation of the intestine, and febrile attacks which show that an acute affection is beginning. The author makes a longitudinal incision, dissects the sac high up, resects it, and sutures the edges of the ring. The operation is simple, rapid and gives good results.

**Congenital Stricture of the Urethra.**—Gallois (*Nord méd.*, Dec. 1, 1909) describes three cases of stricture of the urethra of congenital origin observed by him. Not many such cases have as yet been published. There are three locations at which the urethra is naturally narrowed, but there are also other abnormal narrowings. The embryonic development of the urethra enables us to understand the reason of congenital stricture. The urethra is developed in three parts: the posterior urethra results from the closure of the cloaca and the disappearance of the cloacal pouch; the spongy portion is derived from the urogenital sinus; the balanitic portion is derived from the balanitic layer. If these three portions are not normally adherent into one or the lumen is not perfect an opportunity is given for the formation of strictures by arrest of development. The histological examination of such a case showed that there is no modification of the urethral mucosa; the principal lesion is an irregular sclerosis without any signs of inflammation. The process is a subepithelial sclerosis. The stricture may be

found at any time from birth, it having been observed as early as the ninth day of life. It may be cylindrical or annular, or there may be valvular structures in the course of the urethra. The stricture is generally single. The symptoms may begin as those of an acute condition and gradually become chronic. First there is a period of abnormal length of the act of micturition with small stream and frequency of urination; then retention or habitual incontinence occurs.

**Education of Deaf Children.**—J. D. Wright (*Jour. Amer. Med. Assn.*, 1909, liii, 2156) is not an advocate of beginning the actual teaching of speech to a totally deaf child as young as two or three years of age. If there is some perception of sound it may be possible to train and develop that imperfect hearing so that it may greatly aid in the acquisition of speech, and this may be begun earlier than articulation teaching to a totally deaf child. But the training to understand spoken language by lip reading cannot be begun too early in any case. The child should be placed under trained and experienced instruction not later than six years of age, and, if physically strong and well developed, it is better to begin at four and a half or five. Centuries of inheritance have rendered the years from two to twelve the principal language-learning time for the child. The deaf child that has not acquired much language by twelve years of age is doomed to a bitter and discouraging struggle, and it is cruel to let anything interfere with the greatest possible progress in the first ten years of the child's life. The educators of the deaf are still somewhat divided, and there are still manualists who employ the manual alphabet and gestural signs in the educational process, and oralists who exclude all forms of communication not employed by hearing people. The writer strongly favors the pure oral method.

**Difficulties in the Diagnosis of Scarlet Fever.**—In citing the usual difficulties in the diagnosis of scarlatina, J. F. Schamberg (*Arch. Ped.*, Dec., 1909) makes a suggestion which is interesting in view of the frequency with which an initial cathartic dose of calomel is given and such drugs as aspirin are prescribed. He says that in treating patients with an acute sore throat, it is inadvisable to administer any drugs which are capable of exciting an eruption of a scarlatinoid character for, if such a rash appear, Hippocrates himself would be unable to exclude scarlet fever from the diagnosis. The drugs which are most likely to produce an eruption of this character are quinine, the salicylates, veronal, antipyrin, calomel, belladonna, etc.

**Reduction of Temperature in Children.**—W. C. Hollopeter and H. B. Mills (*Penn. Med. Jour.*, Dec., 1909) urge abstinence from the use of drugs and the employment of the ice-bag to the head, sponging with water reduced gradually from 90° or 95° to 70°, colonic irrigation with water similarly lowered from 95° to 70°, and free ventilation with fresh air regardless of the temperature of the patient.

# THE AMERICAN JOURNAL OF OBSTETRICS

AND

## DISEASES OF WOMEN AND CHILDREN.

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### ORIGINAL COMMUNICATIONS.

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IS PUBIOTOMY A JUSTIFIABLE OPERATION.\*

SECOND COMMUNICATION BASED UPON A SERIES OF TWENTY-FIVE SUCCESSFUL CASES.

BY

J. WHITRIDGE WILLIAMS,

Professor of Obstetrics, Johns Hopkins University.

In a report made to the American Gynecological Society in May, 1908, based upon thirteen successful operations, I held that pubiotomy had a distinct field of usefulness under certain definite conditions. Since that time twelve additional operations have been performed in my service, making a total of twenty-five. Moreover, seven of the women who had been subjected to pubiotomy have been delivered subsequently, and I have been able to reexamine twenty-two of the patients at periods of from three months to three years afterward.

On this occasion I shall consider in the first place the immediate results of the operation both for the mother and child, and then take up its remote effects upon the general health and industrial efficiency of the former, as well as its influence upon the course of subsequent pregnancy and labor. I shall then review the recent literature upon the subject, and finally consider the technique and indication for the operation, as developed by my own experience and literary studies.†

*Immediate Results:*—In the twelve cases here reported there were no maternal or fetal deaths, so that in the entire series of twenty-five operations all of the mothers and twenty-two of the

\* Read before the American Gynecological Society, May 3, 1910.

† Histories at the end of the article.

children were saved, and it may be added that the death of only one of the latter could be attributed to the operation; namely, case V of the previous series.

On analyzing the histories of the twenty-five operations, one finds that twelve of the patients were primiparous and thirteen multiparous, while nine were white and sixteen black. Moreover, the accompanying table shows the incidence of the several varieties of contracted pelvis and their partition between the two races.

Type of pelvis	Total number	In 9 white women	In 16 black women
Generally contracted rhachitic.....	14	2	12
Generally contracted funnel.....	3	2	1
Generally contracted.....	1	.....	1
Simple flat.....	3	3	.....
Flat rhachitic.....	2	.....	2
Typical funnel.....	2	2	.....
	25	9	16

It thus appears that rhachitic pelvises were noted in only two of the nine white patients, as compared with fourteen of the sixteen black patients, an incidence of 22 and 75 per cent. respectively. In twenty cases presenting the usual types of pelvic deformity the conjugata vera varied from 7 to 8.75 cm.; whereas in the five generally contracted and typical funnel pelvises the distance between the tubera ischii measured 7 to 7.75 cm.

In the entire series there were one transverse, four breech, and twenty vertex presentations. In the latter category the positions noted were as follows: L. O. A., three; L. O. T., six; R. O. T., six; and R. O. P., five; thus indicating that in 55 per cent. of the cases the occiput was directed toward the right side. Moreover, the fact that anterior positions were noted in only 15 per cent. of the cases clearly emphasizes the effect of the pelvic abnormality upon the position of the head.

Ordinarily the operation was not undertaken until a long test of the second stage had demonstrated that nature was unable to overcome the disproportion between the size of the head and the pelvis, its average duration being three and one-half hours. In five cases, on the other hand, interference was effected earlier. Thus, in case XXI, in which the child presented transversely, the operation was undertaken one hour after complete dilata-

tion of the cervix and a large child readily delivered by version and extraction; while in cases VII, IX, XVII, and XVIII interference seemed indicated before the cervix had become completely dilated. In these cases the external os varied from 5 to 8 cm. in diameter and was dilated manually before undertaking the pubiotomy. In cases IX and XVII interference was called for by exhaustion on the part of the mother, as indicated by a rise in the pulse rate to 120 or more and a slight elevation in temperature. In case VII manual dilatation of the cervix and completion of labor seemed indicated on account of the prolapse of a foot and its protrusion from the vulva, while in case XVIII interference appears to have been unjustified. In this instance the multiparous patient had a generally contracted rhachitic pelvis with a diagonal conjugate of 9.75 cm. She had previously gone through several difficult labors, and, having lost the children, was most anxious for a live child. As her pulse became somewhat rapid, manual dilatation of the very soft cervix was undertaken when it had attained a diameter of 5 cm. This was readily accomplished, and a small child weighing 2,080 grams delivered after pubiotomy and an easy forceps operation. In this instance the operation was not justified, and was done under a misapprehension concerning the size of the child, which appeared much larger before delivery than afterward.

In all but the first case, in which the technique of Gigli was employed, the pubiotomy was done by Doederlein's subcutaneous method, and in every instance the child was delivered immediately after sawing the bone for the reason that the operation had been deferred until demanded by the appearance of some indication for prompt delivery on the part of the mother or child, or until a prolonged second stage had shown that nature was unable to complete the task. Delivery was effected by forceps in eighteen, by breech extraction in four, by podalic version from head presentations in two, and by version from a transverse presentation in one case. Moreover, in the hope of preventing injury to the soft parts, the vaginal outlet was freely dilated with the hand before severing the pubic bone.

Serious hemorrhage was noted only in case V, which was complicated by a deep communicating vaginal tear following the breech extraction of a 4,050 gram child. The patient was put back to bed considerably shocked, but eventually made a satisfactory recovery.

Perineal tears were noted in three primiparæ and three mul-

tiparæ. In five instances they were slight, but in case V, already mentioned, the tear was deep; all were repaired immediately and healed by first intention. Communicating vaginal tears were noted in five instances, once in the first and four times in the present series. Three occurred in primiparæ and two in multiparæ, and with one exception were immediately repaired by sutures and healed without difficulty. All but one of the women so injured had fever, which was moderate in two and severe in two cases. Of the latter, case V was seriously ill, while case XXII had a temperature of 103.2, but, as intrauterine cultures showed the existence of gonorrheal infection, it could not necessarily be connected with the lesion.

As far as I can ascertain the method by which delivery is effected has only a slight influence in the production of such tears, as two of them complicated seven breech extractions, and three occurred during the course of eighteen forceps deliveries. Moreover, it would appear that in not a few instances the tear might have been avoided had the assistant, who performed the operation, made horizontal instead of upward traction while delivering the head through the vulva.

In no instance was the bladder injured, nor did the patients at any time pass bloody urine, while catheterization was necessary in only six cases. In three instances it was limited to the day of operation, while in only one of the remaining cases was it continued for more than a few days. With the exception of case V, none of the patients were seriously ill during the puerperium, and the majority apparently suffered but little. In many instances they turned spontaneously in bed the day after operation and were anxious to sit up at the expiration of a few days. Several got out of bed during the first week in the absence of a nurse, but sustained no injury from so doing. Ordinarily the patients were kept in bed for three weeks and discharged at the end of the fourth, although my experience seems to show that so long a rest in bed is not necessary and it will be shortened in the future.

During the puerperium fourteen of the twenty-five patients presented a temperature of 100.5 or over—56 per cent.—although with one exception none of them appeared seriously ill. Thus,

In five cases the temperature varied from 100.5 to 100.9.

In seven cases the temperature varied from 101 to 102.

In one case the temperature reached 102.5.

In one case the temperature reached 103.2.

In the last instance it is doubtful whether the fever should be

ascribed entirely to the operation, as gonococci were demonstrated in the uterine lochia. In all patients there was a certain amount of œdema about the vulva for the first few days following the operation, which, however, disappeared spontaneously. In cases I and IV quite a marked hematoma developed in the labium majus on the side of the operation, while in cases VII and XVII the convalescence was complicated by a mild phlebitis.

On discharge at the end of the fourth week the pubiotomy skin incision, as well as any tears which might have occurred during delivery, were found to be satisfactorily healed. Generally speaking, there was considerable thickening upon the anterior surface of the severed pubic bone, while no trace of the section could be felt posteriorly. On passive movement of the thigh definite motility at the site of section was elicited in sixteen out of the twenty-five patients, thus showing that healing had occurred by fibrous rather than by bony union. In only one instance, case I, was any injury sustained by the sacro-iliac joint, but gave rise to only transient trouble.

That the fibrous union had no effect upon locomotion was shown by the fact that all of the patients, except case XIX were able to walk without difficulty at the time of discharge. In this instance, however, the painful locomotion could hardly be ascribed to the operation, as the patient had suffered during pregnancy from such marked relaxation of the sacro-iliac joints that she was able to walk only when wearing a tight binder, while the condition has gradually improved since delivery. In all cases the condition of the internal genitalia was excellent, and retrodisplacement of the uterus was noted only in two instances.

*Remote Effects of the Operation Upon Patient.*—I have personally reexamined twenty-one out of the twenty-five patients of this series, and have heard by letter from two others, at periods varying from two months to three and a half years after the pubiotomy, and in every instance have found that they were well satisfied with its results. Indeed, after a lapse of several months, none of the patients complained of any untoward symptoms, except case XIX, who nine months after operation stated that she still had some difficulty in walking, although this was gradually improving, and this was the patient already mentioned who had suffered from relaxation of the sacro-iliac joints during pregnancy. All of the other women reported that they were able to walk as well and work quite as hard as previously,

and, indeed, several stated that they would be perfectly willing to submit to another operation should it become necessary.

My experience, however, seems to indicate that the immediate results are more satisfactory in slightly built than in heavy women, as nearly all of the rhachitic negroes stated that they suffered but very little; while some of the heavier white women reported that they had experienced some difficulty in locomotion for several months after leaving the hospital, which, however, eventually disappeared. In such cases they were able to walk reasonable distances without discomfort, but suffered more or less pain when greater distances were attempted, yet in no instance except case XIX did the symptoms persist longer than a few months.

It is interesting to note that in the majority of patients the upper skin wound, which originally lay above and parallel to the superior margin of the pubic bone, gradually changes its position, so that in the course of time its cicatrix occupies a position corresponding to the middle or even the lower margin of the bone, and, being completely covered by pubic hair, is often difficult to locate.

On reexamination no change was noted in the motility at the site of section, as the condition persisted in those women in whom it was present at the time of discharge, and did not appear in those in whom it was originally absent. As has already been indicated, definite motility was noted in two-thirds of the patients, and it would accordingly appear that if bony union is to occur it must develop during the weeks immediately following delivery, whereas if it has not been effected by that time fibrous union will persist.

Up to the present time the literature records autopsy findings in five patients upon whom pubiotomy had been performed one to four years previously. These were reported by Oberndorfer, Welponer and Cristofolletti (two cases), Reifferscheid and Mayer. In four the union was entirely fibrous, and in the case reported by Mayer the connective-tissue formation was so slight that the cut ends of the bone were merely united by a few shreds, the integrity of the pelvic girdle being maintained by the fibrous tissue which had developed upon the anterior and posterior surfaces of the bone. On the other hand, true bony union had occurred in one of the cases reported by Welponer and Cristofolletti, while an elevated bony ridge upon the posterior surface of the bone indicated the site of section and encroached slightly upon

the pelvic cavity. From these reports and my own experience it would therefore seem that fibrous healing is the rule and bony union the exception.

The findings at the site of the bone section, likewise, vary considerably according as the patient is examined within a few weeks or after a longer period. In the first instance there is usually considerable thickening upon the anterior surface of the pubic bone, while no trace of the incision can be felt upon its posterior surface. On the other hand, a subsequent examination will frequently show that the anterior thickening has disappeared, while the site of the incision on the posterior surface may be indicated by a shallow depression, which sometimes terminates by a slight notch at its superior and inferior extremity. Only once in our series of cases could definite separation between the ends of the bone be detected on palpation (case XXIV), but in this instance a shallow groove 1 cm. in width lay between them, and buckled slightly upon passive movement of the thigh.

*Effect Upon the Pelvis.*—Upon reexamination all of my patients were subjected to careful mensuration for the purpose of determining what effect, if any, the operation had exerted upon the size of the pelvis. Changes were noted in eleven instances: cases II, VI, VII, XI, XV, XVI, XVII, XVIII, XIX, XXIII, and XIV. In several they were so slight that it was questionable whether they were due to actual enlargement or merely to some slight error in pelvimetry. In others, on the contrary, the changes were so pronounced that there could be no doubt as to their significance. In eight patients the distance between the tubera ischii had undoubtedly become increased following the operation. This varied from 1 to 2 1/2 cm., and in several instances, as will be pointed out later, apparently led to sufficient enlargement to make possible the spontaneous ending of subsequent labors. The increase in the diagonal conjugate was less marked, but in five patients the measurement was 0.5 to 1.25 cm. longer than previously, while in two it was also associated with an increase in the distance between the tubera ischii.

These findings are of considerable interest, as they appear to indicate that permanent enlargement of the pelvis may occur in something less than one-half of the cases, and is more pronounced in the transverse diameter of the outlet than at the superior strait. Moreover, to a certain extent, they appear to be contradictory of the statement of Mayer, who holds that the practical

effect of pubiotomy is to accentuate the funnel shape of the pelvis, as a result of rotation of the innominate bones about a horizontal axis, whereby the area of the superior strait becomes absolutely increased and that of the inferior strait relatively decreased. However this may be, the fact remains that the distance between the tubera ischii is frequently increased, which would appear to indicate that pubiotomy is especially adapted to the treatment of dystocia due to contractions of the pelvic outlet.

*Effect Upon Labor.*—Of the fifteen patients operated upon prior to January 1, 1909, six have subsequently become pregnant once and one twice, and I shall give a brief abstract of the history of each case in order to determine if possible the effect of the operation upon the course of subsequent labors.

CASE II.—Generally contracted funnel pelvis; C. D., 10 cm.; tubers, 7 cm.; pubiotomy child weighed 2,660 grams. The first subsequent pregnancy terminated prematurely at the seventh month, while the second ended spontaneously with the birth of a child weighing 3,640 grams. Mensuration showed that the tubera ischii were 1 cm. wider apart than before operation, while the child was 980 grams heavier.

CASE IV.—Flat rhachitic pelvis; C. D., 8 1/2 cm. The pubiotomy child weighed 3,230 grams. The subsequent labor was spontaneous, and the child weighed 3,100 grams; no change in pelvic measurements.

CASE V.—Generally contracted rhachitic pelvis; C. D., 9.75 cm. The pubiotomy child weighed 4,050 grams, while in the subsequent labor a child weighing 2,500 grams was delivered by Cesarean section. Examination showed no change in the pelvic measurements.

CASE VI.—Generally contracted rhachitic pelvis; C.D., 9.5 cm. The pubiotomy child weighed 3,230 grams, while the subsequent child delivered by Cesarean section weighed 3,430 grams. The previous operation led to marked changes in the pelvic dimensions which will be considered below.

CASE VII.—Generally contracted rhachitic pelvis; C. D., 8.75 cm. The pubiotomy child weighed 3,040 grams, while the subsequent labor was ended by a repeated pubiotomy (case XV of this series), although the child weighed only 2,110 grams, the pelvic measurements showed an increase of 1.25 cm. in the distance between the tubera ischii.

CASE IX.—Flat rhachitic pelvis; C. D., 10.5 cm. Unfortunately the weight of the pubiotomy child was lost, but the subsequent labor ended spontaneously with the birth of a 3,400 gram child, although no change had occurred in the pelvic measurements.

CASE XII.—Funnel pelvis; tubers, 7 cm. The pubiotomy

and subsequent child weighed 3,275 and 3,850 grams, respectively. It seems that the spontaneous delivery of the latter, which was 575 grams heavier than the first child, was probably due to an increase of 1 cm. in the distance between the tubera ischii.

From the data just adduced, it would appear that in two instances the subsequent pregnancy was terminated by Cesarean section, in one by a repeated pubiotomy, in four by spontaneous labor at term, and in one by spontaneous premature labor. Naturally it is difficult to determine whether the pubiotomy played any part in the spontaneous outcome in the four patients who were delivered naturally at term. In two of them, namely, cases II and XII, the children born spontaneously were, respectively, 980 and 575 grams heavier than those delivered by pubiotomy. In the first instance the pelvis was of the generally contracted funnel type and in the second of the typical funnel variety, and in each the operation was followed by an increase in the distance between the tubera ischii, so that it might appear that the fortunate outcome was due to the enlargement following pubiotomy. Concerning the other two patients with spontaneous labor no definite statement can be made; as in case IV the second child was 130 grams lighter than the first, while in case IX the weight of the first child was not available for comparison, but in neither instance did the pelvic measurements show any enlargement.

Cases VI of former and XXVI of present article give some idea of the difficulty of formulating a prognosis in this regard. The patient had a generally contracted rhachitic pelvis with a diagonal conjugate of 9.5 cm. Her first labor was terminated by the delivery of a 3,230 gram child after pubiotomy, and the head presented a deep depression over the left parietal bone where it had passed over the promontory of the sacrum. When she reentered the hospital in the latter part of her subsequent pregnancy no appreciable change could be detected in the pelvic measurements, although there was definite motility at the pubic section. In view of the fact that the pubiotomy delivery was very difficult and the present child seemed to be larger than the previous one, Cesarean section at the onset of labor seemed to offer the most conservative method of treatment. Accordingly, no further vaginal examinations were made, and the operation was performed as soon as possible after the onset of labor. Unfortunately, however, she died from an infection resulting from an error in technique.

The autopsy findings were most remarkable (case XXVI), and throw a new light upon the changes occurring in the pelvis during pregnancy subsequent to a pubiotomy which had healed by fibrous union. Upon removing the pelvis from the body and paring off the soft parts as well as possible, it was found that marked motility existed at the site of the bone section, and that the fibrous tissue uniting the ends of the bone had undergone such pronounced softening and stretching that it was possible to cause it to "buckle" by compressing the sides of the pelvis; while it permitted the ends of the bones to make a vertical excursion of 2.5 cm. when movement was imparted to the two sides of the pelvis. This condition was also associated with a considerable enlargement of the various pelvic measurements. Thus the conjugata vera was increased to 9 cm., while the distance between the anterior superior spines and crests of the ilium could be increased from 20 to 21 cm. and the length of the transverse diameter of the superior strait from 12 to 13 cm. accordingly as the cut ends of the bone were forced together or drawn apart. In the same way the transverse diameter of the outlet could be increased from 11 to 13 cm., although its anteroposterior diameter was not effected by passive movements.

An x-ray photograph likewise revealed an interesting condition in that it indicated that the innominate bones had undergone a certain amount of rotation about the sacrum so that the line of section, instead of the symphysis pubis, lay opposite the promontory of the sacrum. As a result the anterior portion of the right sacro-iliac joint was opened up, thereby increasing the length of the right oblique at the expense of the left oblique diameter of the superior strait.

These observations would appear to indicate that the relaxation incident to the hyperemia of pregnancy resulted in an enlargement of the pelvis sufficient to permit the occurrence of spontaneous labor, had nature not been forestalled by the Cesarean section. This possibility, however, was not considered, as the degree of motility observed *intra vitam* was not sufficiently pronounced to cause one to suspect the existence of the conditions found at autopsy. For further details concerning the anatomical findings in this case, the reader is referred to the detailed history at the end of the article.

In spite of the phenomenal relaxation, it is interesting to note that the patient walked perfectly well instead of suffering from the painful locomotion usually associated with relaxation at

the symphysis pubis or sacro-iliac joints. In such cases the pregnant woman is usually bed-ridden or can walk only when the ends of the bones are held together by a firm pelvic binder; and consequently the question arises as to whether the difference in location of the relaxation can explain the absence of symptoms: This must probably be answered in the affirmative, as the orthopedists inform me that a pseudoarthrosis following the fracture of a long bone is unattended by pain, whereas relaxation occurring in the neighborhood of a joint is usually associated with distressing symptoms, and it would seem that a similar explanation might apply in this instance.

That such a degree of relaxation cannot always be expected is shown by the fact that a second pubiotomy was necessary in the subsequent labor of case VII, although the child weighed 930 grams less than at the first labor. Moreover, the absence of enlargement of the pelvis in cases IV, V, and IX, on repeated mensuration, would point to a similar conclusion. At the same time the observation just recorded is of great interest, as it throws new light upon the extent of the enlargement which sometimes follows pubiotomy which has healed by fibrous union and then been subjected to the influence of the hyperemia incident to a repeated pregnancy, and likewise indicates that in such cases a conservative policy may well be followed, as it may possibly end in the spontaneous extrusion of a normal sized child.

The repeated pubiotomy recorded in case XV is also of very considerable interest. In this instance the first operation was done upon the left and the second upon the right side, with the idea that if it were repeated in the same location adhesions might be encountered which would complicate its course. The patient made an uninterrupted recovery and was able to walk and work perfectly satisfactorily, notwithstanding the fact that a movable segment had been interpolated in the anterior pelvic wall.

On looking over the literature, I find that repeated pubiotomies upon the same patient have been reported by Preller, Neu, Hoehne, Kupferberg, Reifferscheid, and Scheven. All of these operators, with the exception of Hoehne, did the second pubiotomy upon the opposite side to the first one, but the latter repeated it at the site of the previous section in the hope that he might secure a broader fibrous union, which would increase the possibility of greater relaxation in a subsequent pregnancy.

*Literature.*—Since the appearance of my article in 1908, the literature upon pubiotomy has been comparatively scanty. This is due in part to the great interest in the development of suprasymphyseal Cesarean section in Germany and its tentative employment by many authorities in place of pubiotomy.

Probably the most important contribution to the subject during this period is the article of Schläfli from Herff's clinic in Basel. This is based upon the study of 700 cases of pubiotomy reported in the literature, including eight of his own, and shows a maternal and a fetal mortality of 9.6 and 4.82 per cent., respectively, which after certain justifiable corrections may be reduced to 9.18 and 4.37 per cent. In view of this he considers, as the dangers to the mother are very considerable and the fate of the child so uncertain, that the operation should be employed only in the presence of some pressing necessity. For this reason he condemns prophylactic pubiotomy and urges that the procedure be resorted to only after nature has shown her absolute inability to lead the case to a successful issue. From his own experience he reports that six of his eight patients complained of considerable difficulty in walking, and four suffered from incontinence of urine for a long period following the operation.

From my point of view his statements do not seem to place the subject in a perfectly fair light; more especially as the 664 operations concerning which he was able to obtain more or less full details were performed by 142 operators. On analyzing his figures more closely, I find that sixty-four operators reported one operation, nineteen two operations, nineteen three operations, and six four operations each, making a total of 183 operations by 108 men; whereas the remaining 481 operations were performed by thirty-eight men. It therefore appears justifiable to assume that in the first group of cases the mortality would naturally be much higher than in the second, as it represents the casual results of the occasional operator instead of the matured experience of the trained man. That such a conclusion is justified is apparently shown by the discussion before the German Gynecological Society in 1907, when nineteen operators reported 319 pubiotomies with six deaths, a maternal mortality of 1.88 per cent.

Since that time the following series of operations have been reported:

Bumm, 1908, fifty-two pubiotomies with one death.

Hoehne, 1908, twenty pubiotomies with one death.

Schauta, 1908, thirty pubiotomies with no death.

Reifferscheid, 1909, thirty pubiotomies with one death.

Baisch (Doederlein), 1909, forty-two pubiotomies with one death.

Myself, twenty-five pubiotomies with no death.

Making a total of 199 cases with four deaths, a maternal mortality of 2 per cent., while the corresponding fetal mortality was approximately 4 per cent.—figures which I believe represent the results which may be obtained by competent operators in well-chosen material.

Bürger, in a monograph based upon the study of 5,288 cases of contracted pelvis occurring in Schauta's clinic during the previous fifteen years, speaks quite enthusiastically of the operation, and states that it should play a great part in doing away with craniotomy upon the living child. During this period the latter was necessary in seventy-six instances, and had pubiotomy been employed in the forty-five women who presented no signs of infection, the incidence of craniotomy upon the living child would have been reduced from 1.7 to 0.8 per cent. and the fetal mortality from 10.7 to 7.1 per cent.

Moreover, Baisch in a recent article states that the application of radical surgical procedures such as Cesarean section, supra-symphyseal Cesarean section, and pubiotomy, to the exclusion of the induction of premature labor and the so-called prophylactic and compromise operations, leads to a marked increase in the number of spontaneous labors occurring in large series of contracted pelvis cases and to a considerable diminution in the maternal mortality, as well as a lesser one on the part of the fetus, as is clearly shown by the following table:

	Compromise operations Baumm, Fehling and Küstner	Compromise operations plus surgical procedures Leopold, Schauta, and Chrobak	Radical surgical procedures Pinard, Zweifel, Doederlein, and Bumm
Spontaneous labors....	50-60 per cent.	70-75 per cent.	80 per cent.
Maternal mortality....	over 1 per cent.	about 1/2 per cent.	nearly 0 per cent.
Fetal mortality.....	over 10 per cent.	about 10 per cent.	Less than 10 per cent.

Scheffzek, on the other hand, takes an opposite view and reports 1,011 contracted pelvis cases occurring in Baumm's clinic with 54 per cent. of spontaneous labors, including eighteen pubi-

otomies with two maternal and five fetal deaths. As a result of his experience, he holds that the dangers to the mother are too great to justify the continued employment of pubiotomy, as deep tears, injury to the bladder, and fatal infection are very liable to occur, while a patient who has once been subjected to the operation will not willingly submit to another. As his results with suprasymphyseal Cesarean section were no better, he believes that the induction of premature labor is the treatment par excellence in this class of cases.

The only French article upon the subject is that of Jeannin and Cathala which is based upon three successful cases from Bar's clinic. In noninfected cases they consider that pubiotomy gives no better results than Cesarean section, while it is much less dangerous in the presence of infection. At the same time they hold that its performance under such conditions markedly changes the results, as is shown by the tabulation of Rossier, who in 189 cases found that the maternal mortality was 17 and 2.9 per cent. respectively, according as the operation was done upon infected or upon uninfected women.

In this country Vorhees and Lobenstine have each reported one operation, and are quite prepared to give it a further trial, although the results in neither of their cases was ideal. On the other hand, C. B. Reed in an editorial in *Surgery, Gynecology and Obstetrics* for 1909, as well as in an article entitled "Pubiotomy, an operation for the general practitioner," takes an unduly optimistic view, as he states that it is a simple operation which can be safely performed by the general practitioner and constitutes the ideal procedure for the treatment of 75 per cent. of the cases complicated by contracted pelvis.

*Indications and Technique.*—My own experience as well as the results reported in the literature tend to show that when pubiotomy is properly performed under suitable indications upon uninfected women, the maternal mortality should not exceed 2 per cent., while approximately 95 per cent. of the children should be saved. As injuries to the bladder did not occur in any of my patients, and were noted but rarely in the statistics of those who employed Doederlein's operative technique, I feel that their occurrence should probably be attributed to the use of the purely subcutaneous method, to excessive separation of the ends of the bone, or to the employment of undue violence in delivering the child.

For these reasons such injuries may be considered as prevent-

able; while, on the other hand, it would appear that the chief dangers of the operation are hemorrhage, communicating vaginal tears, and infection, which cannot always be avoided. In only one of my cases was the hemorrhage alarming at the time of operation, and the entire literature records only two instances in which it led to a fatal issue; namely, those reported by Rosthorn and Raineri. Ordinarily the hemorrhage is venous in character; frequently it is very slight in amount and even when abundant usually yields to pressure. At the same time the occurrence of the two fatal cases shows that serious hemorrhage is a danger to be reckoned with, even though it occur but rarely.

Communicating vaginal tears have been noted in all series of the cases thus far reported, and appear to some extent at least to be unavoidable accompaniments of the operation, and to occupy relatively the same position as do extensive perineal tears in the usual obstetrical operations. Nevertheless, it appears that the frequency of their occurrence can be minimized by two precautions; namely, extensive manual dilatation of the vaginal outlet before commencing the operation, but more particularly by paying attention to the direction in which traction is made during forceps delivery. Under such circumstances, as the head emerges from the vulva, traction should be made almost horizontally, instead of upward and forward as in typical forceps operations. In several pubiotomies performed in my presence by my assistants, it has seemed to me that the injury might have been prevented had such a precaution been taken, and its importance was likewise recognized by Pfannenstiel.

As has already been indicated abnormal puerperia were noted in 55 per cent. of my cases. Only one patient was seriously ill, although another who had a gonorrheal infection presented a temperature of 103.2. Doubtless, a certain proportion of rises in temperature would have occurred had the labor been normal, or some simple operative procedure been undertaken. At the same time their incidence is too great to be attributed solely to the usual factors, and it must be admitted that there is something about pubiotomy which predisposes to infection. Possibly it is due to the unfavorable situation of the wound, and more particularly to the extensive opening up of connective tissue spaces. Nevertheless, it would seem that its frequency might be materially decreased by sharpening our aseptic precautions, as well by changing gloves or having some one who had not assisted directly at the delivery close the external pubiotomy

wounds, as by so doing certain possibilities for contamination might be eliminated.

I feel very strongly that a conjugata vera of 7 cm. should constitute the lowest limit of pelvic deformity in which the operation is permissible; for if it be exceeded the amount of gaping necessary to permit delivery of the child is so great as almost necessarily to lead to injury of the sacro-iliac joints, to which I am inclined to attribute a large part of the disturbances in locomotion reported by certain writers. Moreover, in my experience those patients have done best in whom the extent of gaping between the cut ends of the bone did not exceed 4 or, at most, 5 cm.

As already indicated, the pubiotomy in all my cases was followed by the immediate delivery of the child by forceps or version and extraction as the case might be. This was due to the fact that with a few exceptions I did not resort to the operation until a definite indication had arisen on the part of the mother or child, which seemed to call for the immediate termination of labor. Moreover, I consider that the great value of the operation lies in the fact that in "border-line" cases it enables one to observe an expectant attitude during the second stage and thus give nature every facility to overcome the disproportion, while at the same time it leaves the patient in such a condition that the operation may safely be undertaken if necessary. For this reason I am opposed to the so-called prophylactic operation and consequently have not waited for the spontaneous extrusion of the child after section of the bone.

Moreover, should conditions arise in a patient with a "border-line" pelvis which seem to indicate the necessity for prompt delivery while the cervix is still only partially dilated, I feel that the most satisfactory results will be obtained by completing the dilatation manually, placing the saw in position and then applying forceps tentatively, so that, in case the head fails to follow the first few gentle tractions, the bone may be sawed through and the resistance be overcome.

This prophylactic placing of the saw seems to me to have a comparatively wide field of application. It was done in case XXI preparatory to version from a transverse presentation, and the pubis was sawed through when it was found that extraction could not be effected without too great a risk to the child; while in case XXVI the saw was laid prophylactically but not used as the extraction of the child presenting by the breech was readily

effected. It would also seem a wise precaution in certain breech presentations when the size of the pelvis or of the child, or the history of past labors makes it probable that difficulty may be experienced in extraction. In such cases the prophylactic placing of the saw makes it possible for one to resort promptly to pubiotomy if necessary; whereas, if the saw is not laid until the indication for its use becomes imperative, the probabilities are that so much time will have elapsed between recognizing the necessity for interference and severing the bone that whatever chances the child had of living would have been sacrificed.

In my previous communication I stated my views concerning the relation of pubiotomy to the induction of premature labor and the performance of Cesarean section. At that time I held that it should practically supplant the former in "border-line" cases, whereas it should not be considered as entering into competition with the classical indications for the latter. I still hold the same views, and consider that it is inferior to Cesarean section upon uninfected women at the end of pregnancy, but is far superior to it when done after a prolonged test of the powers of nature in the second stage.

For this reason, when the conjugata vera measures 7 cm. or less or when the past history of the patient is such as to make it fairly probable that labor must be ended artificially in one way or another, I consider that the best and most conservative results will be obtained if primary Cesarean section is done at the end of pregnancy. Such a course was followed in the subsequent pregnancies of cases V and VI, and would have been in the subsequent labor of case VII had the patient been seen sufficiently early; but as she was not admitted until the time of election had already passed, she was allowed to go into the second stage, and a second pubiotomy was performed after nature had shown herself inefficient to overcome the disproportion.

During the past few years the development of suprasymphyseal Cesarean section in Germany by Franck, Sellheim, Doederlein, and Latzo have led to a considerable restriction in the performance of pubiotomy in its favor. Personally I am not prepared to express a decided opinion as to its merits, but theoretically I am inclined to believe that the extensive connective-tissue wounds necessarily associated with it will not lead to a marked improvement over the results following the classical operation. That such a belief is probably correct is shown by the recent statistics of Holzapfel, who reports a maternal mortality

of 8 per cent. in 162 suprasymphyseal Cesarean sections collected from the literature. This figure includes five deaths in fifteen eclamptic patients, but even after deducting them there were eight deaths in the 147 remaining operations, a net mortality of  $5\frac{1}{2}$  per cent., which is much greater than that of pubiotomy and approximately that of the classical Cesarean section. The future, however, can only decide whether the operation will have an extended field of employment or not, but I am prepared to let others make the experiment.

I might add that I do not consider pubiotomy an ideal surgical procedure, but for the present I feel that it is a valuable adjunct in the treatment of "border-line" cases of pelvic contraction, in that it enables one to subject the patient to a rigorous test of labor and then resort to operation without materially increasing her danger, and with every prospect of saving more than 90 per cent. of the children.

I feel very strongly that pubiotomy should always be considered a primary operation, and should not be performed after other unsuccessful attempts at delivery have been made, although an exception in this respect may be made in those cases in which the saw is placed prophylactically. Moreover, I believe that it should not be employed in definitely infected women, as under such circumstances the maternal mortality according to Rossier rises to such an extent as to make it unjustifiable—2.9 to 17 per cent. With such results it would seem unwise to subject the patient to so great a risk for the sake of saving a child whose chances are probably already compromised, and under such conditions I consider tentative forceps followed by craniotomy, if necessary, the preferable procedure.

#### CASE HISTORIES.

(Continuing Cases I to XIII in AMER. JOUR. OBST.,  
1908, lviii, No. 2.)

CASE XIV.—No. 3484. Freyer, twenty-seven years old, III-para, and two miscarriages. All labors very slow, lasting two or three days and ended instrumentally. Generally contracted rhachitic pelvis, 24, 25.75, 30.5, 18 and 10.25 cm. Pubic arch fair, tubers 9 cm. Large child in L. S. A. frank breech. The first stage of labor lasted forty-seven hours, and in spite of good second-stage pains for two hours there was only slight engagement. At that time the uterus had become tetanically contracted, pulse 120, and temperature 99.6. In view of these conditions, the history of the previous labors

and the fact that the child seemed to be large, pubiotomy was decided upon.

June 6, 1908.—Left-sided pubiotomy. Considerable hemorrhage immediately after severing the bone, readily controlled by pressure. The bone wound gaped spontaneously for 1 cm. which increased to 4 cm. during extraction. As the tetanic condition of the uterus made it impossible to bring down a foot, typical frank breech extraction was readily effected without perineal or vaginal tear.

The convalescence was satisfactory and the patient suffered but little pain. She was placed on her side on the second day and the following day turned without assistance and was out of bed on the twentieth day. The highest temperature was 102.5 on the ninth day, which was apparently connected with some infiltration of the left labium majus.

Discharged on the thirtieth day in excellent condition. Definite motility at the bone incision; some thickening on the anterior surface, posterior surface perfectly smooth. Sacro-iliac joints negative, internal genitalia normal. Walks fairly well, but with a slight limp which she attributes to pain in the left hip.

The female child was born in excellent condition and weighed 3,310 grams at birth and 3,830 on discharge. Was suckled by mother. Head measurements at birth 12.5, 11.25, 9.5, 9, and 8 cm.

Further history not obtained, as a letter written January, 1910, was returned unanswered.

CASE XV.—No. 3631. Roles, aged nineteen years. Same patient as case VII, upon whom pubiotomy was performed February 3, 1907. Generally contracted rhachitic assimilation pelvis, 23, 23, 27, 14.25, 8.5, and 7 cm. Pubic arch wide, tubers 11.75 cm. Was seen by the out-patient service, when the child which lay transversely was converted into R. O. T. by external maneuvers.

She was later sent into the hospital. After two and one-half hours of strong second-stage pains the head was still above the superior strait in the posterior parietal position and could not be impressed even under anesthesia.

September 18, 1908.—Right-sided pubiotomy, Dr. Storrs. Considerable bleeding, readily controlled by pressure. The child was turned and extracted without difficulty, the ends of the bone separating 5 cm. As the former pubiotomy had been on the left side, Dr. Storrs thought it simpler to do the second on the opposite side, so as to avoid any complications due to possible adhesions.

Typical recovery, the highest temperature being 100.4 the day of delivery. The patient turned spontaneously in bed on the fourth day, and had no complications except for slight separation of the skin wound. Catheterization not necessary. Was up on the eleventh, walked on the twenty-second, and was discharged on the thirtieth day. At that time no callus could

be felt on the posterior surface of the bone, but instead a slight depression indicated the line of section. Sacro-iliac joints normal. Definite motility of both the old and new pubiotomy wounds. Patient walked perfectly and complained of no pain. When seen some months later she reported that she had gone to a dance one month after leaving the hospital.

The child was born in excellent condition, but presented a distinct depression on the right parietal bone. Head measurements 12.5, 10.5, 9.5, 8.5, and 7 cm. Suckled by mother. Weighed 2,110 grams at birth and 2,390 grams at discharge.

CASE XVI.—No. 3780. Novitski. Aged thirty-two, VII-para, two children still-born, the others born alive spontaneously after prolonged labors. The last labor was ended by version on account of prolapsed extremities. Simple flat pelvis, 27.5, 29.5, 33.5, 18, and 10.5 cm. Pubic arch wide, tubers 12 cm. Child presented in R. O. P. First stage of labor rapid, cervix becoming completely dilated in four hours. As engagement did not occur after four hours of rather ineffectual second-stage pains, pubiotomy was determined upon.

January 6, 1909.—Left-sided pubiotomy. The child was readily delivered after version and extraction. Placenta followed immediately after its delivery. Unfortunately no note was made as to the amount of separation of the pubic bones. No vaginal or perineal tear.

Convalescence typical, highest temperature 100.5 on the fourth day; catheterization not necessary. Did not complain of pain and stood up on the fourteenth day and walked perfectly well at the end of three weeks. On discharge there was a certain amount of induration on the anterior surface of the pubic bone, but not on the posterior, where the site of incision was indicated by a slight depression, whose ends were indicated by shallow notches on the upper and lower margin of the bone. Definite motility on passive movements; sacro-iliac joints normal; patient walks readily and without pain. Internal genitalia negative. Pelvic mensuration showed that the diagonal conjugate had increased 1 cm. and the transverse of outlet 1 1/2 cm.

The child was born in good condition, weighed 2,990 grams at birth and 3,690 on discharge and presented the following head measurements: 13, 11.75, 9.5, 8.75, and 8.25 cm. Suckled by mother.

January 27, 1901.—The patient returned for examination, and stated that she was able to walk as well and work as hard as at any time of her life. The conditions about the pubiotomy wound have markedly changed. On the anterior surface of the pubic bone there is a slight depression at the site of incision, while posteriorly a rounded ridge 1 cm. wide and 0.5 cm. high extends vertically over it. There is no motility on passive movement of thigh, but slight movement is detected in walking. Genitalia negative. The baby did well after leaving the hospital, but died from typhoid fever when ten months old.

CASE XVII.—No. 3797. Adler. A stout, white o-para, aged thirty-two. Funnel pelvis, 23.75, 28, 32.5, and 20 cm. Diagonal conjugate could not be measured; pubic arch narrow; distance between tubera ischii 7 cm. Posterior sagittal 8 cm.; antero-posterior diameter of outlet 11.5 cm. Child in R. O. T. Patient was seen by Dr. Bergland in consultation after she had been twenty-eight hours in labor. Examination under chloroform showed head below ischial spines; cervix not completely dilated; membranes ruptured.

Admitted to the hospital with a pulse of 120; after having been for thirty-six hours in the first stage of labor. On this account it was determined to complete the dilatation of the cervix by Harris' method and attempt delivery by forceps. During the dilatation of the outlet a slight tear occurred in the left vaginal sulcus, after which the cervix was dilated and the head rotated manually to R. O. A. without difficulty. Forceps were applied, but, as there was no advance in spite of strong traction, Dr. Storrs did a left-sided pubiotomy on January 22, 1909.

There was very little bleeding and delivery was readily effected during which the ends of the bone gaped 4 cm. Immediate expression of placenta, and, as the uterus did not react promptly to a hypodermic injection of ergotol, an intrauterine pack was placed. There was a first degree vaginal tear, as well as one in the left vaginal sulcus extending 4 cm. above the hymen and communicating with the pubiotomy wound. This was packed but not sutured, and the patient put back to bed considerably shocked.

She made a satisfactory recovery, the highest temperature reaching 102 on the eighth day, due to a slight phlebitis in the left groin, which, however, did not give rise to edema. The upper pubiotomy incision broke down on the sixteenth day forming a sinus which closed in some days. The general recovery was good, and the patient complained of but little discomfort.

On discharge locomotion has excellent, and the pubiotomy wounds were in excellent condition; posterior surface of pubic bone smooth, a slight ridge on anterior surface; slight motility; sacro-iliac joints normal. It was also found that the distance between the tubera ischii had increased 1.25 cm., measuring 8.25 instead of 7 cm., while the antero-posterior of outlet and the diagonal conjugate were unchanged. The child was born in good condition, but presented a deep depression over its forehead, where it had been dragged past the tip of the sacrum. It presented the following head measurements: 13.75, 11.75, 9.25, 8.50, and 8 cm., and weighed 3,430 at birth and 3,940 on discharge.

Subsequent note, February 1, 1910.—Patient is delighted with the result of the operation, and says she can do whatever she did before. Weighs 168 pounds and has suckled baby for one year. Definite shallow depression 1 cm. in width on anterior, but

no trace of section on posterior surface of bone. Definite motility on passive movements. Genitalia normal.

CASE XVIII.—No. 3844. Fingold, white, III-para, aged twenty-five. Two children born dead at term after operative delivery, one being followed by a complete perineal tear; one spontaneous premature labor at seven and one-half months. Generally contracted rhachitic pelvis, 23.75, 25, 28.75, 17, and 9.75 cm. Pubic arch narrow, distance between tubera ischii 8 cm. Anterior and posterior sagittal diameters 5 and 7.75 cm. and antero-posterior of outlet 12 cm. Membranes ruptured spontaneously three days before the onset of labor. After ten and one-half hours of pain the child was found in L. O. T., head not engaged but bulging markedly over the symphysis pubis. External os 5 cm. in diameter with soft margins. On account of the past history and the unfavorable position of the child it was thought best to interfere, although no radical indications were present.

February 24, 1909.—Easy manual dilatation of cervix; typical left-sided pubiotomy. Very slight bleeding; delivered by forceps without difficulty, the bone wound separating 3 cm. The vagina was not torn, but there was a slight nick in the scar of the previous perineal operation.

The puerperium was most satisfactory. The highest temperature was 100.5 except for a rise to 101 on the day of delivery. There was slight edema of the left labium majus and the catheter was employed once. The upper pubiotomy incision broke down to some extent, but the patient was out of bed on the sixteenth day and discharged on the thirty-second day. At that time she walked well and without pain. There was no callus on either surface of the pubic bone, although a slight depression on the anterior surface indicated the site of section, at either end of which there was a definite notch. Definite motility on passive movement of thigh.

The child was born asphyxiated and was resuscitated with difficulty. It weighed 2,080 grams and presented the following head measurements: 12.25, 10.25, 8.25, 7.25, and 6.25 cm. It died on the twenty-seventh day from a streptococcus infection.

This operation was probably unnecessary, as the size of the child had been miscalculated; it being probable that spontaneous labor would have occurred had nothing been done. We were led to interfere more particularly by the fact that the woman was intensely desirous of having a living child. When reexamined eight months later she was in excellent condition.

CASE XIX.—No. 3897. Flynn. White, aged thirty-two years, III-para. One craniotomy and two operative labors with dead children. Flat pelvis, 26, 29, 34, 18, and 10.75 cm. Tubers 9 cm. Child in R. O. T. At the end of three hours of strong second-stage pains the head was still movable at the superior strait, bulging over the symphysis pubis, and showed no tendency to enter the pelvis.

April 18, 1909.—Left-sided pubiotomy by Dr. Storrs. The operation was typical and easy; very slight hemorrhage. Child readily delivered by high forceps, during which the bone wound gaped 4 cm. No vaginal or perineal tear. Convalescence most satisfactory, highest temperature 100 on the fifth day. Practically no pain. Catheterization not necessary. Out of bed on the twentieth and discharged on the thirty-fourth day. At that time the pubiotomy wounds were well healed; no callus on either surface; marked motility on passive movement; sacro-iliac joints normal. Patient walks with some difficulty, but locomotion is far better than before labor when there was marked relaxation of the left sacro-iliac joint, which was only relieved by strapping the pelvis.

The child was born in excellent condition; head measurements, 13, 11.75, 9.5, 9.5, and 8 cm. It weighed 4,870 grams at birth and 5,350 on discharge, and was suckled by its mother.

Patient returned for examination, January 27, 1910, weighing 168 pounds. She complained of some pain and discomfort in the left hip on exertion, but stated that she can do ordinary housework without difficulty; can walk about a half a mile with ease, but begins to limp when she goes further. She does not complain of this as she states that it is far less troublesome than before delivery. On the anterior surface of the pubic bone there is a slight depression corresponding to the incision and a still shallower one on the posterior surface. Median to the latter is a vertical ridge which apparently corresponds to the symphyseal cartilage; sacro-iliac joints normal; marked motility on passive movements of thigh; genitalia normal, except for moderate relaxation of outlet and a bilateral cervical tear. Pelvic mensuration shows that the Baudelocque has increased 2 cm. and the diagonal conjugate  $1\frac{1}{4}$  cm., while the outlet measurements are unchanged.

CASE XX.—No. 3905. Glascoe. Black, aged twenty-five years, one previous spontaneous labor. Pelvis generally contracted, rhachitic. Measurements, 21.75, 22.5, 28, 17, and 10 cm. Pubic arch normal. Child in R. O. T. Membranes ruptured spontaneously eight hours after onset of labor, when the cervix was 3 cm. in diameter and the head movable above the pelvic brim, overlapping the pubis. Following this a caput developed, and six and one-half hours after the rupture of the membranes the cervix was almost completely dilated; the head still floating, and as the fetal heart sounds had become irregular, pubiotomy was decided upon.

June 18, 1909.—Left-sided operation, Dr. Storrs, preceded by preliminary stretching of the outlet and completion of the cervical dilatation. After severing the bone, which separated 4 cm., the head could be forced into the pelvis, whence it was extracted by forceps in good condition. No perineal or vaginal tear.

The convalescence was quite satisfactory, although there was

considerable abdominal distention for the first few days. The temperature reached 102.2 on the second day, but at no time was the patient seriously sick, nor did she suffer materially. Some slight swelling of the labium majus. Not catheterized. Out of bed on the twentieth and discharged on the thirty-first day in good condition. Locomotion good, no complaint, no note as to motility; genitalia normal.

The female child was born in good condition and weighed 3,750 grams at birth and 4,550 at discharge. Head measurements, 14, 12, 9.25, 9.50, and 7.75 cm. Suckled by mother.

Patient wrote from Philadelphia, January 2, 1910, that she walks as well as before the operation and could make no complaint of any kind.

CASE XXI.—No. 4092. Solen. White, II-para. Both children born dead after operative delivery elsewhere. Pelvis generally contracted, rhachitic. Measurements, 24, 25.25, 28.75, 17, and 10.5 cm. Patient admitted at 8 P. M., after having been in labor three hours. Child in L. Ac. dorso-posterior position, attempts at external version unavailing. Vaginal examination one hour later showed the cervix fully dilated and the membranes unruptured. In view of the history of two dead-born children and the pelvic measurements, it was decided to place a Gigli saw prophylactically, rupture the membranes and turn and extract the child, and to resort to pubiotomy in case of difficulty.

At 10.15 P. M., September 7, 1909, Dr. Slemmons placed the saw in position as for a left-sided pubiotomy, and after rupturing the membranes, readily performed version and extracted the child up to the head without difficulty. As that did not follow after one minute's vigorous traction, aided by pressure from above, the pubis was sawed through. The ends of the bone gaped 3 to 4 cm. and readily permitted the extraction of a live child. A slight tear extended up the left anterior vaginal sulcus and communicated with the bone wound. Repaired with catgut. Perineum not torn.

Puerperium satisfactory. Very slight edema of left labium. Very little complaint; highest temperature 100.4 on the fifth day. Not catheterized. Up on the nineteenth day and discharged on the twenty-fifth day, feeling perfectly well, walking without difficulty and complaining of no pain. Wounds well healed; some callous tissue on anterior surface of pubic bone. Moderate motility.

The male child was slightly asphyxiated, but readily resuscitated and weighed 4,000 grams at birth and 4,240 on discharge. Head measurements, 12.5, 11.5, 9.5, 9.5, and 7.5 cm. Suckled by mother.

Subsequent note, February 5, 1910.—Patient states that she has done very satisfactorily since the operation, walks as well as ever, and can attend to her ordinary household duties without difficulty. When, however, she seriously overexerts herself she suffers some pain in the left hip, which is gradually growing

less. Has suckled her child which has done excellently. Examination shows normal genitalia, except for a movable retroflexed uterus. The pubic bone is not thickened and shows no trace of section on either its anterior or posterior surface. Definite motility on passive movement of thigh. Mensuration shows no appreciable change.

CASE XXII.—No. 4107. Wescott. Black, aged sixteen years, 0-para. Pelvis, generally contracted funnel; measurements, 24.5, 26.5, 31, 19, 10.75, and 9 cm. Pubic arch narrow, tubers 7 1/2 cm. Child in R. O. P.

Patient had slight pains three days. On admission the membranes were bulging; cervix completely dilated, head freely movable at superior strait. On account of the history of prolonged labor and the fact that the child seems to be large, pubiotomy was decided upon.

September 16, 1909.—Typical left-sided pubiotomy, Dr. Ainley. Very little hemorrhage. Scanzoni application of forceps; easy extraction; bones separated about 5 cm. Communicating vaginal tear in left sulcus 6 to 7 cm. long closed with catgut. Slight perineal laceration, two sutures.

Puerperium febrile, but otherwise satisfactory; temperature 103.2 on the tenth day. Gonococci in uterine lochia. Not catheterized. Patient out of bed on twentieth day; left hospital on twenty-ninth day. On discharge the pubiotomy wound was excellent; on anterior surface of pubic bone a slight furrow, with a notch at its lower end; posterior surface smooth; marked motility on passive movement; locomotion excellent and without pain. Uterus retroflexed, movable, well involuted; perineum well healed.

The male child was born somewhat asphyxiated, but was readily resuscitated. Weighed 3,700 grams at birth and 3,630 on discharge. Mixed feeding. Head measurements, 13.5, 12, 9.75, 9.25, and 8 cm.

CASE XXIII.—No. 4111. Jackson, black, aged twenty-five years. One difficult but spontaneous labor March, 1904. Pelvis generally contracted, rhachitic; measurements, 23.5, 24, 28, 17, and 10 cm. Pubic arch normal; tubers 13 cm.

The patient was seen by the out-patient department twenty hours after the onset of labor. The membranes ruptured spontaneously an hour or so later, and as the head did not engage she was sent to the hospital. On admission the head was in R. O. P. above the superior strait; severe and frequent pains.

September 18, 1909.—Pubiotomy by Dr. Ainley on the left side five hours after rupture of the membranes. Operation easy. Head rotated manually to R. O. T., easy forceps delivery during which the ends of the bone gaped for 3 cm. Perineum or vagina not torn.

Convalescence most satisfactory, no discomfort; highest temperature 100. Patient turned spontaneously on her side the night of the operation, and in the absence of the nurse on the

fifth day got out of bed and took a few steps, but suffered no ill effects from it. Catheterization not necessary. Walked without difficulty at the end of the second week and was discharged on the twenty-sixth day. At that time there was no trace of the bone wound on either surface of the pubis, but shallow notches were felt on its upper and lower margins. Slight motility on passive movement. Genitalia in excellent condition. The child weighed 2,860 grams at birth and 3,350 on discharge. Suckle by mother. Head measurements, 13.25, 11.25, 9.75, 9.5, and 8 cm.

Subsequent note, February 3, 1910.—Patient reports that she walks as well and works as hard as at any time in her life, and suffers no pain or discomfort. On examination the genitalia are normal; no thickening at site of section, but a shallow depression marks its situation on the anterior surface, while nothing can be felt posteriorly. Distinct motility on passive movements. Pelvic measurements indicate that the diagonal conjugate had become 0.75 cm. longer.

CASE XXIV.—No. 4185. Thanner. White, aged twenty-two years, 0-para. Simple flat pelvis, 25.75, 27, 31.5, 18, and 9.75 cm. Pubic arch fair, tubera ischii 9 cm. Patient fell into labor at 8 A. M., November 14, 1909, and entered the hospital that evening with the cervical canal obliterated and the external os admitting one finger. Child in L. O. T. overlapping the symphysis. The cervix became fully dilated after thirty-four hours of labor when the membranes were ruptured artificially. No advance after three hours of strong second-stage pains. Marked posterior parietal presentation with the sagittal suture 2 cm. behind the symphysis.

November 15, 1909.—Typical left-sided pubiotomy by Dr. Ainley. Forceps extraction without difficulty, the bone wound gaping 4 cm. Moderate amount of bleeding; slight nick in fourchette and a tear 4 cm. long extending up the left anterior vaginal sulcus and communicating with pubiotomy wound. Repaired with catgut.

Puerperium was satisfactory, highest temperature 101.5 on the third day. Slight edema of the labium majus. Imperfect healing of vaginal wound. Patient walked in the third week and was discharged in good condition on the thirtieth day, when she walked without difficulty. There was a distinct separation between the cut ends of the pubic bone of at least 1 cm. and definite motility on passive movement. Genitalia in excellent condition.

The male child weighed 2,830 grams at birth and 3,530 on discharge. Head measurements, 13, 11, 8.5, 8.25, and 7 cm.

Patient returned for inspection January 24, 1910. States that she has done very well. For sometime after returning home she suffered considerable pain in the pubiotomy wound, which has gradually disappeared so that she can walk miles without difficulty. Pelvic examination negative, except for small

retroverted uterus (lactation atrophy). Mensuration shows definite enlargement of pelvis. Conjugata diagonalis 10.75 instead of 9.75 cm., and transverse of outlet 10.5 instead of 9 cm.; an increase of 1 and 1.5 cm., respectively.

CASE XXV.—No. 4253. Wilson. Black, aged twenty-two years, I-para. Operative labor, the child dying the day afterward. Generally contracted rhachitic pelvis, 25, 24.5, 29.5, 16, and 10.25 cm. Pubic arch fair; tubers 8.5 cm. The pelvis is also somewhat oblique owing to a rachitic kyphoscoliosis with a hump in the dorsal region and the convexity of the scoliosis to the right side.

Child in L. O. A., not engaged. The membranes ruptured after fifteen hours of first-stage pains when the cervix was 5 cm. in diameter; seven hours later it was fully dilated. No engagement after two hours of strong second-stage pains with marked overlapping of the bones and a large caput. At the same time the temperature rose to 100.2 and the fetal pulse to nearly 160 per minute. In view of these conditions pubiotomy was decided upon.

January 12, 1910.—Left-sided pubiotomy by Dr. Ainley. Easy, high forceps, during which the cut ends of the bone separated 3 cm.; vagina not torn, and only a slight nick in the perineal mucosa. Convalescence most satisfactory, and the patient scarcely complained of pain at any time. Highest temperature 101.4 on the fifth day. Turned spontaneously on the third, sat up on the eleventh and was out of bed on the twenty-first day. Slight edema of the left labium majus which did not cause discomfort. Catheterization not necessary.

The child was somewhat asphyxiated, but was readily resuscitated. It weighed 3,025 grams at birth, and its head measured 12.5, 10.5, 9, 8.25, and 7 cm. Was suckled by mother.

On discharge on the twenty-seventh day, patient walked perfectly and suffered absolutely no discomfort of any kind. The genitalia were normal; no callus on either surface of the bone section, but slight motility on passive movement of the thigh. Mensuration of the pelvis indicated that permanent enlargement had not resulted.

CASE XXVI.—*Prophylactic Placing of Gigli Saw*.—No. 4125. Miller. White, o-para, aged twenty-three years. Pelvis generally contracted, 23, 27, 35, 19, and 11 cm.; tubera ischii 9 cm.

The patient was admitted to the hospital after having been in labor nearly sixty hours, with the cervix fully dilated and a frank breech at the spines in L. S. P. Accurate palpation was impossible owing to the tense abdomen, though its large size suggested an unusually large child. The pains were poor for the next few hours and no advance occurred.

Thinking that the dystocia was probably due to the size of the child, Dr. Ainley upon my advice placed a Gigli saw in position on the left side before attempting extraction, so that pubiotomy could be promptly performed if difficulty were experienced.

The child, however, was readily extracted and was found to be small and slightly asphyxiated. Following its delivery an unruptured amniotic sac protruded from the cervix, and on rupturing it a second child was found lying in R. S. A., which was readily extracted by Mauriceau's method. A second degree perineal tear resulted, which was repaired as well as the provisional pubiotomy wound. The children were females and weighed 2,790 and 2,980 grams, respectively.

During the course of the night the patient complained of poor vision and five hours after delivery had a typical convulsion, which was followed by sixteen others. She recovered under the usual treatment, although for the first few days there was marked mental disturbance. The temperature rose to 103.4 on the fifth and fell to normal on the tenth day. The patient and her children were discharged on the nineteenth day in good condition.

CASE XXVII.—Subsequent note to case VI (previous article). *Autopsy findings showing effect of pregnancy upon a pelvis previously subjected to pubiotomy.* No. 4116. Black, I-para. Generally contracted rhachitic pelvis, 21, 23, 29, 16.5, and 9.5 cm. Pubic arch wide, tubers 21.5 cm. Marked motility at site of old pubiotomy wound.

Entered the hospital September 22, 1909, threatened with premature labor. Under rest in bed and medicinal treatment the symptoms passed off and she went uninterruptedly to term. Examination on October 23 showed a moderately large child in L. O. T. with the head projecting markedly over the pubis, which could not be impressed into the pelvis by Müller's method. In view of the fact that the last labor had been ended by pubiotomy, with a child weighing 3,220 grams whose head presented a deep promontory depression, it was thought that radical interference would be required at the approaching labor, and that a primary Cesarean section at its onset would be more conservative than a second pubiotomy. Accordingly, directions were given that the patient should not be examined vaginally and preparations be made for Cesarean section at the beginning of labor.

November 10, 1909.—Typical conservative Cesarean section three hours after the first pains. The child was delivered in good condition, weighed 3,430 grams and presented the following head measurements: 13.5, 11.5, 9.5, 9.75, and 8.5 cm. It was fed artificially and weighed 3,645 grams when it left the hospital. Owing to an unfortunate break in technique, the patient became infected and died from general peritonitis the sixth day after operation.

The anatomical diagnosis at autopsy was: Subinvolution of uterus and retention of placental tissue and fetal membranes; streptococcus endometritis; acute fibrino-purulent peritonitis; acute sero-sanguineous pleurisy (bilateral), with compression of left lung; bronchopneumonia; acute splenic tumor; cloudy swelling of viscera, fatty degeneration of liver, generally contracted rhachitic pelvis.

On completing the autopsy, the entire pelvis was excised together with the lumbar vertebra and the upper ends of the femora, and its study showed most interesting conditions. Unusual motility existed at the old pubiotomy wound which, after removing the muscles as well as possible, was found to be filled by a thick mass of soft connective tissue. This buckled markedly when the two sides of the pelvis were pushed together, and permitted a lateral excursion of  $1\frac{1}{2}$  cm., and a vertical one of  $2\frac{1}{2}$  cm.

The true conjugate measured 9 cm. instead of 7.5 or 8 cm. as calculated, although it is possible that the increase may have been due to the relaxation incident to the removal of the pelvis from the body. The transverse diameter of the superior strait could be increased from 12 to 13 cm., the distance between the anterior and superior spines from 20 to 21 cm., and that between the tubera ischii from 11 to 13 cm. as the cut ends of the bone were in contact or drawn apart. The antero-posterior diameter of the outlet measured 11 cm. and was not affected by lateral movements of the pelvis.

An x-ray picture showed that the pelvis had become so rotated on the sacrum that the median fragment of the left pubic bone, instead of the symphysis pubis, lay in the midline opposite the center of the sacral promontory, and that the anterior margin of the right sacro-iliac joint had been somewhat spread apart in consequence.

The entire pelvis was then hardened in formalin, and later, in order to study the conditions at the pubiotomy wound, a block measuring 6.75 cm. in length and 1.75 in height was sawed out from the central portion of the anterior pelvic wall, approximately equidistant from its upper and lower margins. On its upper surface no trace of the median fragment of the left pubic bone was visible, while the distal end of the latter was separated from the symphyseal end of the right pubic bone by a mass of fibrous tissue 3.5 cm. broad on its anterior and 2.5 cm. on its posterior aspect. The portion of this tissue adjoining the right pubic bone was composed of cartilage, while its left half presented a different appearance, being made up partly of cartilage and partly of fibrous and muscular tissue interpolated between the former and the distal end of the left pubic bone. The free surface of the latter was covered by a layer of cartilage 1 to 1.5 mm. thick under which there was a compact layer of bone apparently continuous with that on its anterior and posterior surfaces.

On the lower surface of the block a totally different condition prevailed. The anterior ends of the bones being 3 and the posterior ends  $2\frac{1}{2}$  cm. apart, while the space between them was filled out in great part by cartilage, in the center of which was an oblong piece of bone  $8 \times 4$  mm., corresponding to the median fragment of the left pubic bone. This lay nearly 1 cm. below the level of the superior margin of the horizontal ramus.

The space between it and the distal end of the left pubic bone was in great part filled out by what appeared to be infolded muscular tissue while the free end of the median fragment was covered by cartilage.

On sawing the block longitudinally, it was found that the median fragment of bone occupied only its lower portion, so that its height was considerably less than one-half that of the pubis. Whether this was due to its having sunk down or to the elevation of the distal end of the severed bone cannot be ascertained, but in any event it is apparent that the median fragment had undergone marked atrophy; as originally it must have been of the same height as the rest of the pubic bone, and extended from the median side of the pubic spine to the symphysis pubis.

The following note was also made: "The extent of motility was a great surprise to us, and was so pronounced that it seems that spontaneous labor might have occurred had the patient been left alone, provided of course that the same degree of motility was present during life, as was noted in the excised pelvis."

#### CONCLUSIONS.

1. In twenty-five pubiotomies performed at the Johns Hopkins Hospital there were no maternal and three fetal deaths, only one of which was attributable to the operation.

2. All patients were delivered by forceps or version immediately after the pubiotomy. There were no injuries to the bladder, six perineal and five deep communicating vaginal tears, notwithstanding the fact that twelve of the patients were primiparæ.

3. The relative infrequency of injury to the soft parts is attributed to restricting the operation to suitable grades of pelvic contraction and to the employment of Doederlein's technique, but particularly to extensive manual dilatation of the vagina and perineum prior to operating. The occurrence of such injuries may be still further decreased by making horizontal instead of upward traction when delivering the head through the vulva.

4. The after-treatment is not so onerous as is generally stated, and most of the patients suffer but little. Immobilization of the pelvis is not necessary, a 4-inch adhesive strip around the trochanters being sufficient. The patients usually move spontaneously in bed between the second and fourth days, get up between the fifteenth and twentieth, and are discharged on the thirtieth day with satisfactory locomotion. Healing generally occurs by fibrous union, so that there is definite motility between the ends of the bone in at least two-thirds of the cases.

5. The maternal mortality should not exceed 2 per cent.

provided the operation is performed by competent operators upon uninfected women who have not been exhausted by previous attempts at delivery.

6. It is indicated in contracted pelves when the conjugata vera exceeds 7 cm., and after a test of several hours in the second stage of labor has shown that the disproportion cannot be overcome, as well as in certain funnel-shaped pelves.

7. Prophylactic placing of the saw is indicated prior to breech extractions or versions from transverse presentations when it appears problematical whether the head can pass through the pelvis, and the bone sawed through immediately after discovering that the disproportion cannot be overcome.

8. In multiparæ with a history of repeated difficult labors, or in primiparæ presenting excessive disproportion, pubiotomy is inferior to Cesarean section performed at the end of pregnancy or at the onset of labor; otherwise it does not enter into competition with it, as the former is the operation of choice in borderline pelves after the patient has been subjected to the test of labor, and at that time it is many times less dangerous than the classical Cesarean section.

9. In uninfected women it should replace high forceps, prophylactic version, induction of premature labor and craniotomy upon the living child. In how far it may compete with suprasymphyseal Cesarean section must be shown by future observation.

10. It should not be employed in infected patients or after failure to deliver by other means. It should be regarded as a primary operation whose dangers are infection, deep tears, and hemorrhage.

11. Where the separation between the cut ends of the bone does not exceed 4 or 5 cm., the patients recover perfectly and are able to walk and work as well as ever.

12. In view of the fact that the bone section usually heals by fibrous union, a certain degree of permanent enlargement of the pelvis may follow, particularly in the transverse diameter of the outlet and less so in the conjugate vera. Under the influence of the hyperemia incident to a subsequent pregnancy, this may occasionally become markedly exaggerated and be sufficient to permit spontaneous labor. Should this not occur, a second pubiotomy may be performed, while Cesarean section should be limited to those cases in which the pelvic contraction is marked and the child large.

## LITERATURE.

Baisch. Hebosteotomie und extraperitonealer Kaiserschnitt. *Deutsche med. Wochenschr.*, 1909, No. 46, 2005-2007.

Bumm. Zur Indikationsstellung bei der Pubiotomie. *Zentralbt. f. Gyn.*, 1908, 609-613.

Bürger. Die Geburtsleitung bei engem Becken. Wien, 1908, p. 195.

Hoehne. Ueber wiederholte Hebosteotomie. *Beiträge z. Geb. u. Gyn.*, 1909, xiii, 395-402.

Hoehne. Die Erfolge und Dauererfolge der Hebosteotomie an der Kieler Universitätsfrauenklinik. *Volkmann's Sammlung klin. Vorträge*, 1908, Nos. 497-498, p. 20.

Jeannin et Cathalla. Du Prognostic et des Indications de l'Hebotomie. *L'Obstetrique*, 1908, i, n. s., 440-508.

Kupferberg. Die Therapie bei Beckenverengungen mittleren Grades. *Zentralbt. f. Gyn.*, 1909, 1553-1558.

Lobenstein. A Case of Pubiotomy. *AMER. JOUR. OBST.*, 1909, lix, 668-691.

Mayer. Die Beckenerweiternden Operationen. Berlin, 1908, p. 218.

Neu. Dislokation der ausgesägten Knochenstücke nach doppelseitiger Hebosteotomie. *Monatschr. f. Geb. u. Gyn.*, 1908, xxvii, 381-383.

Oberndorfer. Zur Frage der Heilung der Hebosteotomiewunde. *Zentralbt. f. Gyn.*, 1908, 201-207.

Preller. Ein Fall von wiederholter Pubiotomie an derselben Patientin. *Zentralbt. f. Gyn.*, 1907, 44-47.

Reed, C. B. Pubiotomy. *Surgery, Gynecology and Obstetrics*, 1909, viii, 531-532.

Reed, C. B. Pubiotomy: An Operation for the General Practitioner. *AMER. JOUR. OBST.*, 1909, lx, 100-108.

Reifferscheid. Ueber die Berechtigung der Hebosteotomie. *Zentralbt. f. Gyn.*, 1910, No. 3, 65-72.

Schauta. The Treatment of Labor in Contracted Pelves. *Jour. of Obst. and Gyn. of the British Empire*, 1909, xv, 311-322.

Scheffzek. Rückblick und Ausblick in der Therapie des engen Becken. *Archiv. f. Gyn.*, 1909, lxxxviii, 536-603.

Scheven. Fall von wiederholter Hebosteotomie. *Münchener med. Wochenschr.*, 1909, 2448-2449.

Schläfli. 700 Hebosteotomien. *Zeit. Chir. f. Geb. u. Gyn.*, 1909, lxiv, 85-135.

Vorhees. A Case of Pubiotomy. *AMER. JOUR. OBST.*, 1909, lix, 684-688.

Welponer and Cristofolletti. Zwei Beckenpräparate nach Hebosteotomie. *Gyn. Rundschau*, 1909, iii, 11-18.

## DYSMENORRHEA IN NULLIPAROUS WOMEN WITHOUT GROSS LOCAL PATHOLOGICAL LESIONS.\*

### REPORT OF SEVENTY-THREE CASES.

BY

C. C. NORRIS,

Instructor in Gynecology, University of Pennsylvania; Attending Physician, Maternity Hospital; Assistant Obstetrician and Gynecologist to the Philadelphia Hospital.

AND

E. P. BARNARD,

Attending Physician, Maternity Hospital.  
Philadelphia.

THIS form of dysmenorrhea is frequent and is, as a rule, most unsatisfactory to treat. The cause for this is, that all cases are usually subjected to some form of dilatation operation without sufficient regard for the etiology of each individual case. The causes for dysmenorrhea are so numerous and complex that a careful study of each case is absolutely essential before treatment is instigated.

### ETIOLOGY OF DYSMENORRHEA.

The causes may be divided into three groups: general, failure of development, and stenosis of the cervix.

*General.*—a. Anemias; b. gout and rheumatism; c. hysteria and neuralgia; d. eye strain; e. sedentary life; f. secondary to chronic diseases as phthisis, nephritis, chronic heart or liver diseases, syphilis, etc.; g. chronic appendicitis; h. higher types of civilization (dysmenorrhea is unknown among savage races); i. bad hygiene and malnutrition.

Of these tuberculosis is perhaps the most frequent. Cotte has recently studied this condition. He believes that nearly all phthisical women suffer from dysmenorrhea and has found that the pulmonary lesion is usually aggravated at the menstrual period. Of seventy women treated for tuberculosis, all of whom had dysmenorrhea, forty were entirely cured of their dysmenorrhea by tuberculin. Cotte believes the dysmenorrhea is due to a tuberculosis toxemia. Chronic appendicitis is also a frequent cause for dysmenorrhea. According to Peirsol, this may

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be accounted for by the close anatomical relationship between the meso-appendix and the broad ligament. Von Rosthorn, however, denies the existence of the appendicular-ovarian ligament. The clinical fact that chronic inflammation of the appendix or adhesions of this organ usually produce dysmenorrhea is well known.

In studying a case of dysmenorrhea the individual susceptibility to pain must always be considered. Marie Tobler has shown that among German women, 84 per cent. suffer either pain or disability at the menstrual period, while Englemann finds 50 to 80 per cent. of all American girls suffer more or less dysmenorrhea. In other words, it may be stated that at least 75 per cent. of young women suffer from dysmenorrhea to some extent. Thus a dysmenorrhea of comparatively little moment in itself plus a neurasthenic diathesis or occurring in an individual peculiarly susceptible to pain may amount to a very grave symptom. Great care should be exercised in treating all cases of dysmenorrhea to rule out all general causes before instigating any local treatment.

#### LOCAL CAUSES OF DYSMENORRHEA.

Many local causes of dysmenorrhea exist, among the most frequent is some form of nondevelopment. This may be general, involving the entire genital tract. In other cases the ovaries may be at fault. These may be small round organs similar to the infantile type of ovary or they may be found as long flat bodies analogous to the ovaries of young girls before puberty. Histologically, these ovaries usually possess a very thick capsule which prevents or makes difficult the rupture of the Graafian follicles. It is interesting to note that in examining a series of such ovaries the follicular elements are rarely at fault. As is well known, ovulation and menstruation is synchronous in women in about 72 per cent. of cases. These cases of difficult and painful rupture of the follicle in which ovulation and menstruation are asynchronous constitute, according to many writers, the so-called "Mittelschmerzen" of the Germans. Roux de Brignolles has recently called attention to the frequency with which sclerosis of the ovaries occurs, claiming that the condition is quite frequent in young women and girls, 16 per cent. of all gynecological troubles, according to de Brignolles, are due to this condition. The writers believe that this per cent. is too high. The infantile type of uterus is undoubtedly

a frequent etiological factor in the production of dysmenorrhea. In these cases the entire uterus may be reduced in size. A more common condition, however, is to find the cervix long and taperoid and the corpus uteri small. Normally, the cervix is half the length of the body of the uterus. In these cases the proportion is often reversed. Associated with this type of uterus is usually a pin-point os. Other anatomical anomalies, such as uterus cordiformis or a uterus bilocularis, etc., may also cause severe dysmenorrhea.

*Stenosis of the Cervix.*—This may be present as a narrowing of the external os, of the canal, of the internal os, or as combination of any of these. The most frequent point of constriction is at the internal os. These conditions act as the primary cause of the dysmenorrhea. The actual or exciting cause is found in the products of menstruation. The various conditions which favor clotting of the menstrual blood are all etiological factors in the production of this type of dysmenorrhea. Among the most frequent of these causes is excessive bleeding at the periods, increased clotting properties of the blood, and shreds of tissue which form a nidus for a clot. Some time ago, one of the writers examined histologically, by serial sections, the menstrual discharge from eleven cases of dysmenorrhea and found shreds or portions of the endometrium present in *seven*, showing that this form of membranous dysmenorrhea is more common than generally supposed. Since the publication of these findings two years ago, the splendid work of Hitschmann and Adler has appeared, which has been confirmed in this country by the researches of Norris and Keene and others. These studies show beyond question that there is in normal women, at each menstrual period, a certain amount of desquamation of surface epithelium and indeed in some cases of underlying stroma, and that this is a physiological process. The gap between this and the cases of membranous dysmenorrhea where the entire superficial layer of the endometrium is desquamated at each menstrual period, either as a cast of the uterine cavity or in small shreds, is therefore a relative one. The writers are of the opinion, from the histological and clinical study of the series of cases forming the basis for the present paper, that small pieces of tissue, usually too small to be detected with the naked eye are one of the most frequent etiological factors in the production of the expulsive or spasmodic form of dysmenorrhea. Furthermore, this opinion is strengthened by the careful examination of a

large number of cervixes at the menstrual period. It has been shown by recent investigation that at each menstrual period the entire endometrial cavity, including that of the cervical canal, undergoes a definite cycle which is similar in a general way to the changes produced in the uterus in early pregnancy. Thus, in the corporeal portion of the uterus, the endometrium resolves itself into two distinct layers analogous to the compact and spongy layers found in pregnancy, the stroma cells take on changes similar to the decidua, the cervix becomes softened, the canal more dilatable, and the fibrous tissues of the cervix relax. We know that softening of the cervix is one of the earliest signs of pregnancy, and from recent investigation it has been proven that all maternal signs of pregnancy are reproduced in a miniature form at each menstrual period. Long before the appearance of Hirschmann and Adler's work, Webster and Norris pointed out the fallacies of the theory that dysmenorrhea was produced by stenosis of the cervix alone. It is unusual for an operator to find a cervix which will not admit a sound. The diameter at the tip of an ordinary uterine sound is about 3 mm. It is claimed by Chenhall that an average of one drop of menstrual blood is lost per minute, and by others one drop in three minutes. Thus at the height of the menstrual period blood is passed through the cervical canal at the rate of from twenty to sixty drops per hour. A little reflection will convince anyone that even if blood were lost twice as fast as this, how fallacious are the theories based on contractures of the cervix alone, and this without taking into consideration the softening of the cervix which normally takes place at each menstrual period. Furthermore, it has been demonstrated that menstrual blood will flow through a small capillary tube at a much faster rate than this. Even those comparatively rare cases of cervixes which will not admit the passage of a sound between menstrual periods will at the periods usually easily admit a large sound. If a careful examination is made in those cases where the sound cannot be passed, it will usually be found that the sound is obstructed by a flexion in the canal or is caught in the arbor vitæ. The writers have frequently seen cases which suffered from severe dysmenorrhea and in which a sound could be passed through the cervical canal with the greatest ease, even between periods. The point which the authors wish to emphasize is that stenosis of the cervix alone rarely causes dysmenorrhea. It is the stenosis of the cervix plus the excessive clotting properties of the blood which pro-

duces the trouble. The most frequent cause of clotting of the menstrual blood within the uterus is shreds of endometrium.

Kelly has called attention to another cause for dysmenorrhea which the authors have found present in a few cases; this is a slight endocervicitis, nonspecific in origin, and which yields quickly to treatment.

Much has been written on the question of pathological ante-flexion as a cause of dysmenorrhea. The authors feel very skeptical concerning this condition as an etiological factor. Many cases have been observed in which the ante-flexion was most marked and in which no dysmenorrhea was present or was so slight as to be almost physiologic; while on the other hand the most severe and obstinate types of dysmenorrhea have been encountered in cases where little or no flexion was present. Duncan has pointed out in his studies of extremely ante-flexed uteri that the flow of blood to and from the uterus, to the endometrium, and along the flexed canal could be obstructed only to a very slight degree, and not, in his opinion, sufficiently to be of the slightest importance.

Other theories accounting for dysmenorrhea are chronic endometritis, chronic oophoritis, perisalpingitis, pain caused by the rupture of endometrial blood-vessels during menstruation, spasmodic contractures of the circular elastic fibers of the cervix, neuralgia of the uterus, etc. None of these theories are tenable, excepting those explaining the condition on an inflammatory basis.

#### RESULTS OF HISTOLOGICAL EXAMINATION OF THE ENDOMETRIUM FROM CASES OF DYSMENORRHEA.

In fifty-one of our seventy cases in which sufficient mucosa was removed at operation for a histological examination, true endometritis was found in but three cases. This confirms Kelly's statistics, in which endometritis was present in four out of sixty-four cases. In 90 per cent. of our cases the endometrium was normal, while in one case a small polyp was present.

#### NECESSITY FOR ACCURATE DIAGNOSIS.

The success in the treatment of dysmenorrhea depends upon finding the cause; in other words, dysmenorrhea must be viewed as a symptom and not as a disease. The correct diagnosis can often be arrived at only by a process of exclusion.

## CLINICAL TYPES OF DYSMENORRHEA.

Kelly has divided dysmenorrhea into three groups:

1. *Congestive* type of dysmenorrhea. This dysmenorrhea is similar to the discomfort experienced at the normal period only that in these cases the symptoms are more exaggerated. The pain usually begins a day or two before the flow starts, but may appear four or five days or even a week before menstruation commences. The pain is fairly constant, dull, heavy, aching in character and may extend over the entire lower abdomen to the lower lumbar and sacral region and even to the thighs. In those cases of aplasia or sclerosis of the ovaries, these organs are often extremely sensitive, sometimes one ovary will be found more tender than the other, and this tenderness may alternate from side to side in different periods. Headache, nausea, vomiting, and nervous excitability are often present. Usually these symptoms disappear or are ameliorated after the first day or two of the flow.

2. This group constitutes the *expulsive, spasmodic, or obstructive type of dysmenorrhea*. In these cases the pain appears either with the flow or a few hours before its onset. The suffering is similar to miniature labor pains. It is cramp-like, bearing down in character, and occurs at varying intervals, the paroxysms lasting for a minute or two. The distress is frequently temporarily relieved by the expulsion of a clot. Reflex disturbances are frequent. The pain disappears entirely or to a great extent after the first day or two of the menstrual period. Questioning will nearly always elicit a history of the passage of clots.

The *third* group consists of a *varying combination of the first and second*.

## HEADACHES OCCURRING AT THE MENSTRUAL PERIOD.

Headaches occurring at or just before menstruation have recently received much attention. These are apparently either reflex or congestive. We have recently carried on some interesting experiments regarding the blood-pressure in the latter class, and although we have only had a few cases under observation, it would seem that if the high blood-pressure can be relieved, the headache will disappear. The best success has been obtained with *veritrum viride*. The drug should be exhibited in large doses just as the headache commences.

## TREATMENT OF DYSMENORRHEA.

We have already dwelt upon the necessity of an accurate diagnosis as to the etiology of dysmenorrhea before instigating treatment. As many of these cases occur in young unmarried women, the propriety of a pelvic examination must be carefully considered. The history of the case is here of the greatest assistance. When the expulsive type of dysmenorrhea is met with, general treatment is usually a waste of time and in these cases the authors advise an immediate operation and recommend a course of general treatment during and following the convalescence. These cases give excellent operative results. In the congestive form of dysmenorrhea, operation offers but a small hope of relief. In these cases careful general treatment appropriate to the individual case offers the best hope of cure and should at all events always be given a thorough trial before operative intervention is suggested. If the general treatment fail or if the diagnosis is in doubt, an examination is indicated and this should be made under a general anesthetic; if an operation is to be performed it should be done at the same sitting. At best, the prognosis is not favorable. The patient frequently becomes neurasthenic. Where the combination of the expulsive and congestive forms of dysmenorrhea is encountered, the prognosis should be guarded. The expulsive part of the pain can usually be cured by operation. To attempt to name the drugs which have been used for dysmenorrhea would be to reprint almost the entire Pharmacopeia—phenacetine, the bromides, veratrum viride, apiol, and acetanilid have in our hands given the best results during the dysmenorrhea, while some of the various preparations of iron, often in the form of Bland's pill, plus a vigorous tonic and improved hygiene have in some cases worked wonders, while in others the results have been most disappointing. In those cases in which the dysmenorrhea is due to an undeveloped condition of the ovaries, corpus luteum extract has been given with excellent results. In addition to curing the dysmenorrhea, it is said to develop the ovaries. It is claimed that cases of sterility have been cured by its use.

In the expulsive form of dysmenorrhea citric acid may be given during the convalescence from operation. The dose is 5 gr. three times a day. It acts by reducing the clotting properties of the blood.

Since the time of Battey, who performed a bilateral oophorec-

tomy for dysmenorrhea, various forms of operations have been devised. The great number of these is the proof of their futility. General opinion has, however, now settled upon some operation which will permanently dilate the cervical canal. Chief among the operations for this purpose are dilatation and curettage, dilatation and curettage followed by a Dudley's operation, which consists in splitting the posterior and in some cases the anterior lip of the cervix and stitching the mucosa of the canal to the modified skin covering the portio. This shortens and straightens the canal. Pozzi has recently suggested a somewhat similar plan; in his operation, however, the cervix is split laterally and the two mucous surfaces united. The results of the stomatoplasty appeared very similar to results seen in an ununited shallow bilateral laceration of the cervix. These operations are very effective when the stenosis occurs low down in the canal. In at least 50 per cent. of cases the contracture exists at the internal os. It is difficult to reach this point effectively with either of the splitting operations. Both the two- and four-bladed metranoikter have been employed as a means of dilatation in dysmenorrhea. They are said to dilate well by men who have had experience with them. In the cases observed by the authors where this form of treatment was adopted, the metranoikter caused great pain. The reason for failure in the majority of simple dilatation operations is that the cervix contracts quickly and in a few months resumes its original stenosis. This is true even after prolonged forcible dilatation. Every operator has often seen the cervix contract to such an extent even after a thorough dilatation that it has been difficult to pass the curet into the uterine cavity. How much more, then, will the cervix contract in the course of months and without the relaxing influence of a general anesthetic? To meet this difficulty Wylie and Carstens have devised stem pessaries to be worn for a month or more with the idea of preventing the contraction of the cervix after dilatation and to develop the uterus in cases of aplasia. The theoretical objections to this type of treatment is chiefly the dangers of infection, *i.e.*, the carrying of infection from the vagina to the uterus. The latter is normally a sterile cavity, while the former, rarely the seat of pathological germs in the nullipara, is often the habitat of numerous cocci and is frequently far from being surgically clean. At first glance this type of treatment appears unsurgical, the dangers of the pessary coming out of the uterus and lodging crosswise in the

vagina and from here ulcerating through the bladder or rectum must be borne in mind. It has also been claimed that the pessary, despite the groove on its shaft, may act as a plug and not as a drain in the uterine cavity. Practical experience with these instruments has proved that the dangers have at least been greatly overestimated.

Before performing a dilatation operation of any sort the greatest care must be exercised to rule out the possibility of pelvic inflammatory disease, and this is especially true when the Wylie drain is used. No case should be subjected to operation which presents any evidence of gonorrhea. The exit of Bartholin's glands, the urethra, and the cervix should all be carefully examined, and if infection cannot be positively ruled out the operation should be deferred. A thorough pelvic examination should also be made. Neglect to rule out preexisting inflammatory disease accounts for the majority of the so-called postoperative infections which have been reported as following the use of the Wylie drain.

A time, one or two weeks, before the expected menstrual period should be selected for operation. A thorough dilatation extending over a period of fifteen minutes should first be performed. The amount of dilatation must be governed by the individual case. It should be remembered that a much greater dilatation is required in these cases than in the simple dilatation for curettage. After the dilatation, the entire uterine cavity should be carefully explored, not curetted with the curet, one or two strips of mucosa may be removed if it is thought advisable for histological examination. The possibility of a uterine polyp or a small submucous myoma should be ruled out. These cases are not of inflammatory origin and curettage is not required. After the dilatation and exploration of the uterine cavity, the drain should be inserted, care being taken to select a drain of suitable size. Drains that are too long often come out. The vagina may be lightly packed to steady the drain in its position. This gauze should be removed at the end of twenty-four hours. At the University we keep these patients in bed for a week. Some operators recommend extending this period to two weeks. We have been in the habit of having the patients wear the drain for one month. Wylie recommends six weeks, while Beyea has in one case left the pessary in place for a year. It is very important that the patient be kept under observation while the drain is worn. They should be told of the presence of the drain

and to at once return to the operator should any untoward symptoms arise. The patients are instructed to wear a sterile vulva pad while the drain is in place, and every precaution should be taken to avoid infection. It has been found that the drain does not act as a plug, but rather as the filiform bougie acts in the urethra. Neither does the groove at the sides of the drain tend to become occluded.

#### OPERATIVE RESULTS.

The statistics for this paper have been drawn from seventy-three cases operated on, for the most part, in the Gynecological Clinic at the University of Pennsylvania during the last eleven years. None of the cases which have been operated upon during the last year has been included in these statistics. Of these seventy-three cases we have been able to trace forty, as the following tables show:

Total number of cases which replied to our circular letter, forty.

Number cured, eighteen or 45 per cent.; improved or temporarily cured, eleven or 27.5 per cent.; not improved, eleven or 27.5 per cent.

*The results of the various operations are as follows:*

Dilatation and curettage performed twenty-eight times.

Number cured, eleven or 39.28 per cent.; improved or temporarily cured, eleven or 39.28 per cent.; not improved, six or 21.42 per cent.

*Dilatation and curettage and Wylie's drain performed nine times.*

Number cured, six or 66.66 per cent.; improved or temporarily cured, one or 11.11 per cent.; not improved, two or 22.22 per cent.

*Dudley's operation performed once.*

Number cured, none; improved or temporarily cured, none; not improved, one or 100 per cent.

*Dudley's operation combined with Wylie's drain performed four times.*

Number cured, two or 50 per cent.; improved or temporarily cured, none; not improved, two or 50 per cent.

In two of the forty cases no record as to the character of the dysmenorrhea was obtainable. The remaining thirty-eight cases, arranged according to the character of the dysmenorrhea

without regard to the operation performed, give the following results:

*Ten cases of congestive dysmenorrhea.*

Number cured, none; improved or temporarily cured, two or 20 per cent.; not improved, eight or 80 per cent.

*Eleven cases of spasmodic or expulsive dysmenorrhea.*

Number cured, nine or 81.81 per cent.; improved or temporarily cured, two or 18.18 per cent.; not improved, none or 0 per cent.

*Seven cases in which the symptoms were a combination of the spasmodic and congestive types.*

Number cured, three or 42.85 per cent.; improved or temporarily cured, one or 14.28 per cent.; not improved, three or 42.85 per cent.

These tables are most striking, when we find that in one type of dysmenorrhea we can cure by operation 81 per cent., while in another we can obtain no absolute cure, and only 20 per cent. of improvements, the necessity of recognizing the character of the dysmenorrhea becomes apparent. Careful diagnosis as to the etiological factor producing the dysmenorrhea is, in the authors' opinion, the key to the success in the treatment of this condition.

Of the above forty cases, twenty were married, fourteen had been married for two years without issue. Of these fourteen previously sterile cases, five or 35.71 per cent. became pregnant within one year following the operation. Sterility statistics are, however, very misleading and for obvious reasons are very unreliable.

Further results from the entire forty cases show that two cases of dilatation and curettage had the operation repeated and both were temporarily improved; one case had a hysterectomy performed and was cured (this was a case of aplasia and the hysterectomy was performed in a Western city); one case had a bilateral oophorectomy performed and was cured (second operation performed in another clinic); one case of an unmarried girl, who had a dilatation and curettage performed without any relief, about a year after the operation she married and became pregnant. The dysmenorrhea was cured by labor; one case was temporarily improved by dilatation and curettage, the menopause appeared four months after operation. Age of patient, thirty-six.

We would call attention to the fact that the greatest care has been observed in following the after-histories of these cases.

No case has been classed as cured which has not been well for one year. One of our cases was entirely cured for eleven months, when pain recommenced, and at the end of sixteen months was as bad as ever. If care had not been observed to select only those cases in which one year had passed since the operation, this and other cases might have been grouped as cures. On the other hand, many of the improved cases should doubtless be classed as cures for, as has been shown by the work of Tobler and Englemann, it may almost be considered normal for women of the present day to have some pain during the menstrual period, and it is probable that some of these improved cases compare very favorably with the average woman.

Some of the results reported by other operators are as follows: Holden says 30 per cent. will be cured or greatly improved, 30 per cent. temporarily improved, sterility relieved in 15 per cent. Holden performs a dilatation and curettage. Wylie thinks that he cures 80 per cent. of his cases occurring in young girls. Dudley cured symptomatically, 75 per cent. Wadsworth, with Dudley's operation, cured a like number. Beyea reports about 75 per cent. of cures with the Wylie drain. In ten of his forty-one cases dilatation and curettage had previously been performed. Kelly reports 18.94 per cent. cures and 14.72 per cent. of improvements, while 34 per cent. were temporarily improved. In these statistics, as in our own, it will be noted that the Wylie drain gives better results than any other form of treatment. We have seen some increase in size in cases of mal-development, but have never seen a bad case of aplasia of the uterus brought to the normal by the use of the Wylie drain.

In conclusion, the authors wish to thank Dr. John G. Clark for the privilege of using material from the Gynecological Department of the University of Pennsylvania.

#### CONCLUSIONS.

1. Dysmenorrhea occurs frequently in young nulliparous women without gross pathological lesions.

2. With exception of general conditions, the most frequent etiological factors in the production of dysmenorrhea are hypoplasia of the uterus or ovaries or a pathological anomaly causing difficulty in the expulsion of the menstrual products. This is due primarily to some form of obstruction in the cervix plus excessive clotting, the latter is often caused by a form of

membranous dysmenorrhea. Membranous dysmenorrhea is a more frequent condition than is generally supposed.

3. The cervix alone, due to the softening and dilatation of the canal which occurs at menstruation, rarely, if ever, produces dysmenorrhea unless accompanied by a condition of the menstrual blood which favors clotting.

4. The so-called pathological ante flexion alone rarely, if ever, produces dysmenorrhea.

5. In treatment it is of paramount importance to recognize the cause of the dysmenorrhea, and for this reason a careful study of each case is necessary. General treatment should not be neglected, and an ether examination is absolutely necessary when a local condition is suspected.

6. The cases which yield the best operative results are those in which the pain makes itself manifest just before the flow begins and is of a spasmodic, expulsive, or obstructive character. The dull, heavy, congestive type of dysmenorrhea is but little relieved by operation. The failure to recognize these two classes of dysmenorrhea accounts for the generally poor operative results.

7. Any form of operation which permanently dilates the cervical canal will relieve the expulsive form of dysmenorrhea. The fault with the simple dilatation operation is that the stenosis frequently recurs. The common history being that these cases are relieved for one or two periods only.

8. In our hands the Wylie drain has proved satisfactory. The drain is not a substitute for dilatation, but rather a supplementary procedure.

9. The Wylie drain must never be used in the presence of an inflammatory lesion.

10. About 25 or 30 per cent. of sterility occurring in women without gross pathological lesions can be relieved by appropriate treatment.

#### REFERENCES.

- Adler and Hitschmann. *Monat. f. Geb. u. Gyn.*, Bd. H. i, 1908.  
 Beyea, H. D. *Surg. Gyn. and Obst.*, 1908, xxx, 437.  
 Carstens, J. H. *Jour. Am. Med. Assn.*, 1909, liii, 1730.  
 Chenhall. *Australian Med. Gaz.*, Sidney, 1906, xxv, 569.  
 Cotte, G. *Gaz. des Hôp.*, Oct. 12, 1909.  
 Dudley. *The Principles and Practice of Gynecology.*  
 de Brignolles, Roux. *La Gyn.*, Sep., 1909.  
 Englewood (quoted by Glasgow). *Med. Record*, N. Y., 1907, lxxii, 177.

- Holden. *Am. Med.*, Nov. 4, 1905, p. 776.  
 Kelly. *Med. Gyn.*  
 Leopold and Mironcoff. *Arch. f. Gyn.*, xlv, 506, 1894.  
 Norris, C. C. *University of Pennsylvania Med. Bull.*, June, 1908.  
 Norris, C. C., and Keene, F. E. *Surg. Gyn. and Obst.*, Jan., 1909, p. 44.  
 Pozzi. *Trans. Am. Gyn. Soc.*, 1909, vol. lix, p. 1029.  
 Tobler, Maria. *Monat. f. Geb. u. Gyn.*, 1905, vol. xxii, p. 1.  
 Vedeler. *Arch. f. Gyn.*, 1883, vol. xxi, p. 211.  
 Webster, J. C. *Text-book of Diseases of Women*, 1907, p. 124.  
 Wylie. *Trans. Am. Gyn. Soc.*, 1909, vol. lix, p. 1029.  
 1503 LOCUST STREET; 119 SOUTH NINETEENTH STREET.

## THE EFFECT OF ANIMAL EXTRACTS UPON UTERINE CONTRACTIONS.

BY

ISAAC OTT, M. D.,

Professor of Physiology, Medico-Chirurgical College of Philadelphia,

AND

JOHN C. SCOTT, M. D.,

Demonstrator of Physiology,  
 Philadelphia, Pa.

(With one illustration.)

In a paper published in the *Journal of Experimental Medicine*, vol. xi, No. 2, 1909, we stated the action of animal extracts upon the uterus by the method of Magnus. In this method a piece of the uterus is excised, placed in Ringer's solution at a temperature of 37.5° C. with oxygen bubbling through it. A segment of the uterus was attached to a lever which recorded the contractions.

In this communication we have studied the action upon the uterus *in situ*. The experiments were made upon rabbits and cats. The animals received paraldehyde by the mouth and ether by inhalation. Fifteen experiments were performed. The animals after being under the influence of ether were fastened upon the holder, the abdomen opened in the median line in its lower segment, the head of the Malassez holder elevated, and the pelvic cavity filled with normal saline solution, which kept the uterine tissue bathed. The sides of the abdominal walls incised were elevated by ligatures to a horizontal bar. This aided in the retention of the normal saline. The temperature of the saline was kept at the temperature of body by means of frequent

additions of the heated saline solution. The uterus was attached by two threads to a myocardiographic lever which inscribed the quite regular uterine contraction with the respiratory movements upon a smoked drum. The dried extracts were rubbed up with distilled water filtered through cotton and injected per jugular. We have obtained a marked uterine contraction with a 20 per cent. extract of the infundibular lobe of the hypophysis. Fig. 1. This has been previously observed by Dale and Bell.

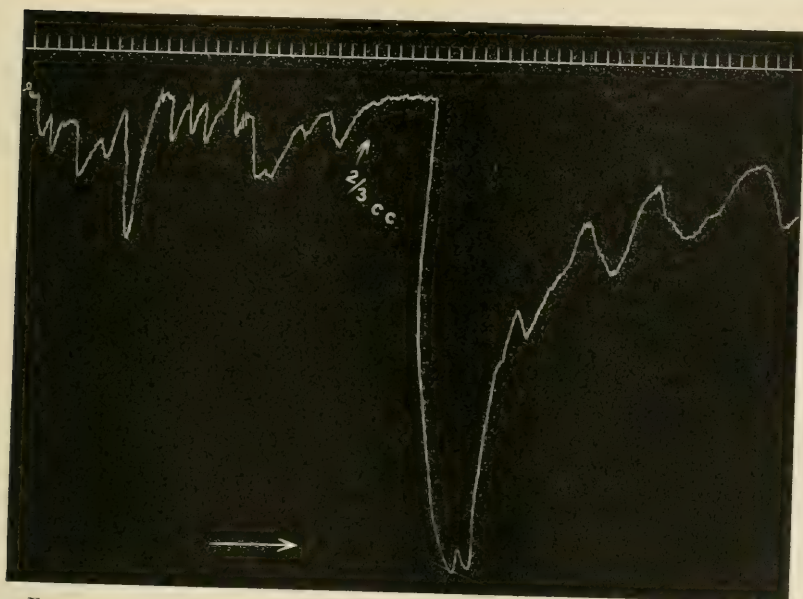


FIG. 1.—Rabbit: parous uterus  $\frac{2}{3}$  of 1 c.c. of infundibular extract of pituitary per jugular. The downward curve shows the contraction of the uterus after infundibulin.

Brain ( $\frac{1}{2}$  grain) per jugular produced marked uterine contractions in the pregnant uterus.

The mammary gland ( $\frac{1}{3}$  grain) in the parous uterus caused marked uterine contractions.

Spleen ( $\frac{1}{2}$  to 1 grain) in the virgin uterus and in pregnant uterus caused marked contraction.

Parathyroid (1 grain) with the parous uterus was followed by increased uterine contraction.

Iodothyryn (2 grains) in virgin uterus produced contractions and in pregnant uterus produced marked uterine contraction.

The parotid (1 grain) in pregnant uterus produced fair uterine contraction.

Pancreas (1 grain) in pregnant uterus produced very marked contractions.

Thymus ( $1/4$  grain) caused some contraction in pregnant uterus.

Prostate ( $1/4$  grain) in pregnant uterus produced marked contraction.

Spermine (Poehl) 10 drop doses, caused some contraction in pregnant uterus of cat.

The ovary ( $1/4$  grain) in the virgin uterus caused slight contraction.

Testicle ( $1/4$  grain) produced slight contraction of the virgin uterus.

Of the above-named agents—infundibulin, brain, mammary gland, spleen, parathyroid, prostate, pancreas, and iodothylin have the most marked activity upon the contractions of the uterus.

When we compare these experiments with those obtained upon the excised uterus we find about the same results.

Bell and others have used the infundibular extract in post-partum hemorrhage. It stopped the bleeding in about three to four minutes. It has also been used in placenta previa with excellent results.

The contractions of the human uterus by it are more prolonged than those produced by any other preparation, not excluding the extremely active preparation of ergot. In two cases of Cesarean section after a single injection the uterus contracted like a bleached ball and subsequently relaxed only to a moderate degree. The preparation used was a 20 per cent. extract of which 1 c.c. given intramuscularly was the dose. It can be repeated in an hour.

MEDICO-CHI. COLLEGE, 1715 CHERRY STREET.

FUNCTIONAL DISORDERS OF THE BLADDER IN THE  
FEMALE SIMULATING CYSTITIS.\*

BY

ARTHUR STEIN, M. D.,

Assistant Visiting Gynecologist to the German Hospital.  
New York.

It is no infrequent occurrence to have women, who come to the physician for some gynecological trouble, make the statement that they have bladder symptoms of some sort or other. These symptoms usually consist of frequent and painful micturition, and occasionally it is specified that the pain occurs before, during, or after emptying the bladder, or that the pains are especially marked during the menstrual period. Usually such women have already been treated by the administration of drugs or by bladder irrigations, since their physician concluded from the subjective symptoms that they had a cystitis. The more we gynecologists are on the lookout for such cases, the more we must become convinced how frequently mistakes are made along these lines and how essential it is to make a correct diagnosis.

When giving such routine treatment the fact is overlooked that a great number of ailments situated outside of the bladder can give symptoms which correspond to those of a real cystitis. This explains the failure of the treatment applied, for subjective symptoms are simply treated without getting at the real cause of the trouble.

We know by experience that the pathological conditions of the female generative organs only too frequently involve the bladder, though the bladder mucous membrane itself has not undergone any change (that is, when there is no real cystitis). We furthermore know that changes in the independent nervous system of the bladder or changes in the general nervous system can cause the typical symptoms of a cystitis without a true cystitis really existing. In spite of these facts the opinion still prevails, especially among general practitioners, that a cystitis must be present whenever there is a frequent desire to urinate.

\*Read at the New York Academy of Medicine, Section on Obstetrics and Gynecology, March 24, 1910.

It may, therefore, be of interest to review all those conditions in the female which can cause bladder symptoms without a true cystitis being present.

Let me say right here that my remarks shall include only such cases in which both the cystoscopic and the chemical examination has excluded a cystitis. This means that cases of cystitis colli will not be considered.

We come then to the real subject matter of this paper. Bladder symptoms without a cystitis may be manifold. Pain before, during, or after urination, a frequent or diminished desire to urinate, tenesmus, paralysis of the bladder, a retention or incontinence on a nervous basis, dribbling of urine with or without retention, may all be the result of pelvic disorders outside of the bladder or of some systemic disease.

To make matters simpler, I shall make three subdivisions:

*First.*—Cases in which there is some pathological change or irritation of the nerve center of the bladder wall itself.

*Second.*—Cases in which there is some pathological change in the genital organs.

*Third.*—Cases in which we are dealing with some general nervous trouble or systemic disease.

To be able to better understand the pathological conditions mentioned under subdivision 1, I shall refer briefly to the few publications concerning the physiology and anatomy of the bladder wall itself. Only when we are fully acquainted with the anatomy and physiology of the bladder will we be in a position to understand its pathological changes.

I do not believe I am exaggerating when I say that next to Frankenhauser's classical paper, published in 1867, the recent work of Roith and E. Kehrer, Jr., deserves the greatest attention. Roith showed in various articles on the nerve plexus of the female pelvis and the innervation of the bladder, that the nerve apparatus is to some extent independent of the central nervous system. He describes it as being situated in the compact connective tissue layer of these organs, alongside of the branches of the hypogastric, the loose connective tissue framework being free of nerve elements. The ganglia are most numerous in the posterior and lateral portions of the cervix, while the ganglion cells of the bladder lie chiefly in front of the cervix in the region of the trigonum. He also established the fact that when the spinal nerves are injured, the sympathetic ganglia in the pelvis take care of the innervation of the bladder. He found that when

all the direct nerve tracts were cut the sensation of a full bladder is effected: 1. Through the muscle sense of those muscles of the pelvic floor which lie adjacent to the bladder. 2. Through a stretching of the parietal peritoneum. 3. Through the sensory fibers of the *nervus pudendus communis* supplying the urethra. When the bladder is filled to a certain degree the walls are put on the stretch; the latter affects the ganglia in the pelvic connective tissue and in the bladder wall and these in turn reflexly cause a contraction of the detrusor.

Kehrer, Jr., has shown that there is a reciprocal relationship between bladder and uterus, a dilatation of the bladder reflexly producing a cessation of uterine contractions. He thus demonstrated experimentally the well-known observation that a very much distended bladder has a tendency to cause hemorrhage and subinvolution of the puerperal uterus. On the other hand, contractions of the bladder will increase uterine contractions, and *vice versa* a sudden dilatation of the uterus will cause a relaxation of the bladder. So, too, contractions of the uterus, brought about by chemical or mechanical stimulants, will cause increased bladder contractions. Kehrer also proved that this reciprocal relationship between the urinary and genital organs continues even after the pelvic and hypogastric nerves, which supply uterus and bladder, have been cut. He therefore concluded that the reflexes between the bladder and uterus are carried on by an independent nervous system in these organs.

What do these anatomical facts teach us? In the first place, they draw our attention to the fact that we are dealing with an independent center in the bladder or with bladder ganglia. Changes in this independent nerve apparatus must therefore be able to cause symptoms resembling those of a true cystitis, although the latter is actually absent. The function of these ganglia resembles that of the plexus of Auerbach and Meissner in the intestinal wall. In both organs we at times get pains, contractions, and tenesmus without even the slightest change in the mucosa. I am convinced that a great deal is still to be gained by further experimental work along the lines followed by Roith and Kehrer, Jr.

To my mind many of the so-called hysterical bladder symptoms are of neuritic origin. In this class of cases it would be absolutely wrong to carry out any local treatment of the bladder; what we should do is to distract the patient's attention from her bladder symptoms by psychical and general treatment. A

recent case of my own has demonstrated to me the logic and possibilities of the latter course. A woman, twenty-seven years old, with a fixed retroflexion, a small ovarian cyst, and signs of general nervousness stated of her own accord that she had to pass her urine every hour during the day and had to get up several times at night. After a careful examination I could find no changes in the bladder mucosa. Together with local treatment for her gynecological ailment I tried psychical treatment. After four weeks the urinary symptoms had entirely disappeared, in spite of the fact that the fixed retroflexion had not been completely relieved. By exclusion, we must therefore conclude that the patient's bladder symptoms were caused by the gynecological condition and possibly in part by an irritation of the nerve centers situated in the bladder wall. At any rate, any local bladder treatment would have been contraindicated. It would only have made the patient take more notice of her urinary symptoms.

Under this subdivision we must also include those cases in which the bladder wall is irritated to such a degree by chemical changes in the urine that typical cystitis symptoms result. It is not generally known that tenesmus can be caused by the drinking of freshly brewed beer. After a few days the symptoms disappear spontaneously or may remain if the patient continues to drink the beer. I agree with Rissmann, that in such cases the symptoms are due to some strongly irritating hop-salt. In Europe these cases are more frequent than here. I only refer to them to show the importance of a chemical examination of the urine whenever we have to deal with bladder symptoms without demonstrable pathological changes. Depending upon the result of the examination we can prescribe the corresponding dietary treatment. Before going over to the second class of cases I wish to mention a rather rare occurrence which might resemble an inflammatory condition of the bladder, but has its origin elsewhere. I refer to those malformations of the urinary tract in which the ureter empties either into the vagina, urethra, or just below the external meatus of the urethra. As a result we get a continuous dribbling of urine, a symptom which also occurs in inflammatory conditions. If only a superficial examination of the case be made, this malformation may lead to the making of a wrong diagnosis and therefore to improper treatment.

I come now to my second subdivision, cases in which there is some pathological condition of the genital organs. A goodly

number of the women who come to the gynecologist for advice complain of bladder symptoms. To convince myself as to how many really make such a complaint I carefully examined the histories of fifty-four patients. Thirty, that is 55  $\frac{1}{2}$  per cent., made no reference to the bladder; eighteen, that is 33  $\frac{1}{3}$  per cent., complained of urinary symptoms, which on careful examination were found not to be due to changes in the bladder itself, and only in six, that is in 11  $\frac{1}{10}$  per cent., the symptoms were due to inflammatory conditions in the bladder. In other words, one-third of all the women seeking advice for some gynecological trouble complain of urinary symptoms, though no real disease of the bladder is present. We may then safely conclude that the symptoms referable to the bladder in these cases are due to the gynecological ailment.

You all know that the menstrual period, a physiological and not a pathological state, can cause bladder symptoms. Very often young girls complain that they have a frequent desire to urinate at the time of their menses. Here we are simply dealing with a bladder which takes part in the general congestion occurring in the pelvic organs during menstruation. Surely the weight of the small anteflexed virgin uterus is not the cause.

Before referring to various pathological pelvic conditions I want to emphasize that the first requisite, before making any other examination, is to analyze the pains during micturition. Pains occurring before urination and diminishing during the act, point toward a true cystitis; if they are most marked during urination, that is if the urine burns, a urethritis is the most likely diagnosis. When the pains are referred to the lower portion of the abdomen, occurring immediately after urination, and continue for some time, we may safely conclude that the peritoneum is involved. Pains of this character frequently accompany a pelvic peritonitis. Thus a patient with inflamed genital organs may have urinary symptoms similar to those of a true cystitis, while the bladder itself is absolutely normal.

To repeat, then, it is necessary to analyze urinary symptoms when they exist. It will not do simply to note in the history "increased frequency of urination" or "painful urination." Mirabeau, in a recent publication, gave an excellent classification of the various bladder symptoms. He distinguishes:

1. Pathological changes as to frequency of micturition.
2. Changes in the normal sensations during urination.
3. Disturbances as regards continence.

4. Changes in the character of the act, whether intermittent, etc.

I have already mentioned that the congestion during menstruation often causes an increased frequency of urination. The same holds true during pregnancy, except that in the later months lack of room is partly the cause of the symptoms. This brings us up to the question of the relation between pelvic tumors and bladder symptoms.

In 1674 myoma cases, Kelly and Cullen found an increased desire to urinate in 109, that is 6 1/2 per cent. In twenty cases there was a partial or complete retention of urine; in seven there was partial or complete incontinence; in only two was there a true cystitis present. A retroflexed pregnant or nonpregnant uterus, hematoceles, ovarian cysts, and cystoceles may all mechanically cause bladder symptoms of various kinds. Regarding cysts, the dermoids, when they have ruptured into the bladder, are especially liable to lead us to believe that we are dealing with a catarrh of the bladder, for then, too, we meet with painful micturition and pus in the urine. Nowadays, with more frequent use of the cystoscope, mistakes in diagnosis should occur but seldom along these lines.

An anteposition of the uterus and a retroflexio-versio have the same effect on the bladder as a retroflexion. By anteposition we mean a uterus which is pushed forward in front of the axis of the pelvis by some exudate, hematocele, or tumor lying behind it. The immediate result of such uterine displacements is an altered bladder function. The latter organ may be distorted, or in advanced cases there may even be compression of the neck of the bladder. Frequent desire and frequent voiding of small quantities of urine are the symptoms accompanying this condition, in fact ischuria paradoxa, that condition in which the patient has a continuous desire to urinate with constant dribbling, may result. Cystocele might also be mentioned here, for through pulling and dragging on the bladder symptoms similar to a cystitis may be caused.

I should just like to say another word regarding the influence of pelvic inflammation on the bladder. We can readily understand how purulent processes in the parametrium, specially those in front of the uterus (the so-called "plastron" of the French writers), can influence the bladder, either by pulling at it, by pressure, or by a direct extension of the inflammatory process to the perivesical tissue. So, too, a carcinoma of the uterus,

which is beginning to involve the perivesical tissue, will give bladder symptoms.

All the pathological conditions mentioned so far, tumors, malpositions of the uterus, cystoceles, inflammations, cause frequent or painful urination when they do cause bladder symptoms.

When we meet with disturbances of urination referable to continence or with changes in the character of the urinary act, we are usually dealing with diseases situated outside of the pelvis. This brings us to subdivision 3, cases with some general nervous trouble or some systemic disease.

Until now I have carefully avoided the expressions hysteria and irritable bladder, for I believe that they can nearly all be explained on some anatomical basis, that is, if they are carefully examined. A few, of course, will still have to be classified as hysteria. In no other way could the incontinence epidemic reported by Karplus in 1906 be explained. A patient with compression myelitis suffered from incontinence; in the same room with her were two girls with hysteria. One day one of the latter claimed she could not get up and began to pass her urine involuntarily; a few days later the other did the same. They remained in bed many weeks with this condition. As far as could be observed, they passed a little urine every few minutes. Finally the symptoms abated without treatment.

Granted that cases of true hysteria still occur at times, I feel certain that most bladder symptoms which are called hysterical are in reality due to inflammatory processes in the pelvis. We have seen that the pelvic ganglia also supply the bladder to some extent. That chronic inflammatory conditions in the pelvis really affect the general nervous system is not to be denied. Concerning this, my former chief in Heidelberg, v. Rosthorn, wrote: "Although the idea of a causal relationship between the general nervous system and pelvic inflammations is antiquated and denied by many, I myself cannot deny its existence when I consider the large number of nerve ganglia in the pelvic connective tissue. The peripheral irritation, caused by a contracting scar in the pelvic connective tissue in which the ganglia and nerves are situated, cannot be without a general effect when we consider the effect of scar contraction in other parts of the body. In addition the pelvis is rich in sympathetic nerve elements. These are in direct connection with the mass of prevertebral ganglia which are in close relation with spinal nerve endings. Is it not therefore justifiable to conclude, says v. Rosthorn, "*that*

*certain functional neuroses have their origin in such local changes?"* He believes that the cases to be explained on this basis are limited in number and have no connection with those cases which neurologists call hysteria.

I am of the same opinion as v. Rosthorn. I too have come across quite a few cases in which the diagnosis, hysterical bladder, had been made, but in which I found a chronic or atrophic parametritis as described by W. A. Freund and thus could explain both the symptoms of the hysteria and those referable to the bladder.

Under this subdivision we must also include those cases of so-called reflex incontinence which are caused by masturbation, by an hypertrophied clitoris, or by a thickened hymen. Operative interference cures these as a rule. Many of them, however, are still diagnosed as hysteria or even as cystitis.

Coming now to the large number of diseases of the nervous system which affect the bladder, tabes heads the list. Though tabes occurs much more seldom in the female than in the male, it cannot be denied that it does occur and can cause bladder symptoms. About 50 per cent. of all the tabes patients have distinct bladder symptoms. As a matter of fact the latter are often among the initial symptoms of the disease. The patients complain of a frequent desire to urinate, of unpleasant sensations during micturition, and occasionally of pollakiuria. In progressive paralyses we also have similar symptoms, that is, in the form in which the knee reflexes are diminished. When the latter increase the irritability of the bladder may also be increased. The picture then resembles the spastic or tonic bladder. The patients cannot urinate spontaneously and occasionally tenesmus sets in. Compression myelitis, multiple sclerosis, syringomyelia, tumors of the vertebral column, may all cause bladder symptoms. Of the cerebral diseases, cortical lesions and those of the crossed pyramidal tracts are most likely to cause bladder disturbances. According to Oppenheim, a frequent desire to urinate is no rare initial symptom in cases of cord tumor, such as tubercle, sarcoma, psammoma, endothelioma, and fibroma.

Though I have had no personal experience with the various kinds of general poisoning, for the sake of completeness I wish to mention their influence upon the bladder.

It is not generally known that morphine, even in very small doses, can cause temporary anuria. The same can happen after CO<sub>2</sub>, terpentine, aniline, and many other forms of poisoning.

This brings us to infectious diseases and their effects on the bladder. Little need be said of these, for they are usually diagnosed and properly treated, so that the secondary bladder symptoms are likewise handled properly.

After mentioning intestinal parasites, hemorrhoids, anal fissures, and constipation, I believe I have referred to all the conditions which might possibly cause bladder disturbances.

I trust I have made it clear that every bladder symptom, be it painful urination, frequent desire to urinate, or purulent urine, is not necessarily due to a cystitis. We have seen that a bladder disturbance may be due to various diseases and that it is often only the symptom of a most grave systemic disease.

I do not consider it correct to use the expression "so-called cystitis" in these cases, because this name suggests a pathological condition of the mucosa. I should like to call all these disturbances "cystalgia," that is, painful bladder, because this name only describes a symptom and does not pin us down to any primary disease of the bladder.

I have purposely avoided any reference to treatment. One can readily understand that it must be as varied as the diseases which cause the bladder disturbances. In short, we must diagnose and treat the cause. Only in this way can we hope to cure the bladder symptoms. The physician who still treats all bladder disturbances as a cystitis, without going to the root of the trouble, will be rewarded with but little success.

I WEST EIGHTY-FIFTH STREET.

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## THE RECTUM AND BOWEL IN THEIR RELATION TO PELVIC DISEASE.\*

BY  
JOSEPH BRETTAUER, M. D.,  
New York.

THE subject assigned to me for discussion to-night is rather an extensive one and I shall not attempt to treat exhaustively its different phases. Consequently, I shall dwell chiefly upon those conditions in which the genital organs are the primary factor. The relation of these organs to the intestinal tract, when the latter is the seat of the primary disease, I leave with confidence to our honored guest.

We all know that lesions of the pelvic floor due to parturition

\*Read before the New York Obstetrical Society, February 8, 1910.

are among the most frequent causes of disturbance of the rectal function. Constipation, more or less chronic, is most often due to injuries of the levator ani muscle, as well as to a relaxed condition of the posterior vaginal wall. This, for every gynecologist, extremely important subject, has on a previous occasion been adequately dealt with before this Society by our late fellow, Dr. Murray, and I may therefore be pardoned if I dismiss it thus summarily.

Posterior displacements of the uterus, in my experience, rarely interfere to a marked degree with the bowel function, when simple and uncomplicated by any inflammatory process. I therefore consider active measures for the treatment of this condition, directed solely toward the relief of constipation, useless and unnecessary. When, however, a movable retroflexion, combined with a relaxed posterior vaginal wall and more or less descensus is encountered, a preexisting slight constipation may easily become more pronounced and then demands correction by plastic operation.

The close proximity of the rectum and genital organs, situated as they are in a circumscribed and inelastic cavity, should prepare us for early pressure symptoms, when tumors, such as fibroids or carcinoma of the uterus, or solid and cystic ovarian growths *encroach* upon the pelvic contents. And yet, in quite an extensive experience with fibroids of all sizes and locations, I have not met with many cases where defecation was directly inhibited by pressure of the neoplasm on the rectum or sigmoid. That this does not happen with large fibroids, which develop upward into the abdominal cavity, is a natural consequence of the anatomical relations of the sigmoid; but that fibroids filling nearly the entire cavity of the small pelvis, and firmly wedged into it, should cause comparatively little interference with defecation is not easily explained. Nevertheless, the fact remains that, aside from displacements of the entire rectum, at times to a considerable degree, actual obstruction is not reported.

Ovarian cysts, when developing between the layers of the broad ligament, likewise not infrequently cause dislocation and distortion of the rectum and sigmoid flexure, producing constipation to a greater or lesser degree.

The conditions met with in malignant neoplasms are somewhat different. Here extensive infiltration of the perirectal cellular tissue is found in the advanced stages, often causing strictures and ulcerations. I can cite a case of advanced carcinoma of

the cervix in which a tight stricture of the upper third of the rectum was the sole reason for seeking medical advice.

Secondary deposits in the Douglas, due to primary carcinoma of the ovary, frequently cause stricture of the rectum.

It has not been my good fortune to detect an early cervical carcinoma by symptoms pointing to rectal disease, as I find reported in recent literature.

In the presence of unilaterally or bilaterally prolapsed ovaries, painful defecation is not infrequently met with.

The intimate relations of the gastrointestinal tract and the genital apparatus are most strikingly shown in the presence of inflammatory conditions. The bowel is always involved, whether the process be acute with a rapid course or of more chronic character with a course protracted sometimes over years.

For the sake of simplicity let us first discuss the involvement of the rectum and sigmoid in the presence of an acute inflammatory process within the pelvis. At the onset such a process may not be immediately recognized. A rise in temperature, increased frequency of the pulse, gastric disturbances, a high degree of meteorism and tenderness of the abdomen, without signs of localization, make it extremely difficult to differentiate between an acute disease of the intestines (appendicitis), of the appendages, or of the cellular tissue of the pelvis. After several days of observation the beginning localization can be recognized. Whether the origin is puerperal, postoperative, or gonorrhoeic (the only ones of frequent occurrence), the infection is regularly accompanied by exudation, which at times reaches enormous proportions and may extend either into the loose cellular tissue of the pelvis or into the peritoneal cavity itself. These conditions obtaining, it is only natural to assume that the perirectal tissue is invariably involved. At times this involvement extends into the layers of the rectal wall, particularly so when an abscess is forming in the center of the exudation. Tenesmus and mucous discharges from the rectum are a clear indication of threatened perforation into the bowel, an outcome which, in former days, was met with quite frequently. Of course I need hardly mention that to-day we try to forestall such an occurrence by opening the abscess cavity through the culdesac of Douglas. Abscesses draining through the rectum usually have a very small opening and incline to repeated retention, to which is added the constant danger of reinfection by the passing fecal column.

At this point I cannot refrain from mentioning a most unfortunate experience of our late member, Dr. W. R. Pryor. A patient suffering from a pelvic abscess which had broken into the rectum was given an enema. The entire fluid was injected directly into the abscess cavity, causing the most acute symptoms pointing to general peritonitis and necessitating immediate operation.

If these retrouterine exudates do not result in abscesses, but retrogress and are gradually absorbed, the symptom giving most discomfort to the patient is difficult and painful defecation. This disability very often continues long after all local signs of an acute inflammatory process have disappeared and only the final scars in the posterior parametrium remain in evidence. These scars, consisting of the shortened, slightly infiltrated sacrouterine ligaments, differ very little from the ultimate residua of a chronic parametritis due to cervical catarrh, tears in the cervix; or sexual abuses. Whatever the etiology, the scars are a common cause of a most obstinate constipation. The poor women suffer untold agonies every time the rectum is evacuated, gradually grow to fear this function, become increasingly accustomed to delay it, and, in some instances, have been known to postpone defecation for days and even weeks. Such cases are by no means rare, and their seriousness can only be sufficiently appreciated when we meet the final result of these months or years of suffering in the person of "The True Hysterical Woman"!

When acute inflammatory processes within the peritoneal cavity are not limited to the pelvis, involvement of the abdominal viscera is a natural consequence of the anatomical relations. It would lead me too far from the object of this evening's discussion were I to attempt to base my conclusions upon an exhaustive review of the anatomical, physiological, and pathological conditions. I prefer, therefore, to limit myself to clinical facts.

The difficulty of diagnosis in the beginning of such inflammations has already been mentioned. Acute salpingitis and oophoritis often cannot be differentiated from appendicitis—operation or observation must decide. During the course of the process, after localization has taken place, we usually find that the sigmoid flexure, small gut, and omentum have been the agencies by means of which the limitation of exudations and abscesses has been brought about.

Rupture of an abscess into the lumen of a coil of intestine is not uncommon. More often, however, these conditions result merely in the formation of adhesions between the originally diseased organ (uterus, tubes, or ovaries) and the intestines, to a degree which varies with the extent and virulence of the disease.

At this point I might mention the occurrence of rupture into the bowel of ovarian cysts, after the pedicle has become twisted. Dermoids may cause more or less inflammation consequent to circulatory disturbances in their walls. In a recently reported case, communication of a tubal gestation sac with the bowel was established, resulting in the discharge of blood with the stools.

The relation of the bowel to pelvic disease is of paramount importance to the abdominal surgeon. He finds daily proof of the intimacy of these relations whenever operating on the internal female organs. The catchword of to-day—limit yourself to the pelvic organs and try not to invade the general peritoneal cavity during your procedure—can only be followed in uncomplicated cases. In the presence of adhesions between the pelvic organs and bowel such a course is often impossible. Lesions of the intestine, due to the manipulation necessitated in separating the adhesions, were formerly of common occurrence. The injuries were sometimes limited to the serous coating, at other times extended into the lumen of the gut. Of late we have carried the line of dissection rather closer to the diseased organ, if necessary leaving parts of an abscess wall or portions of the uterus or ovaries. In this way injury to the gut has been almost invariably avoided, even in the most trying cases. Should such a complication arise, immediate repair has been our invariable custom.

The innumerable procedures devised and recommended for the prevention of postoperative adhesions, testify to their vital importance. No measure has thus far proven of value except consistent attempts to simplify *restitutio ad integrum* by covering the stumps and raw surfaces with peritoneum before closure of the abdomen. That this does absolutely prevent the formation of postoperative adhesions we had an opportunity to verify in two recent cases.

Three months after a primary operation we reopened the abdomen to implant the ureter into the bladder for uretero-vaginal fistula. One of these two cases is certainly a most strik-

ing demonstration of the value of peritonealizing the stumps. The original operation was performed for bilateral adenocystoma of the ovaries, when dense adhesions with the intestines were encountered. On account of the macroscopically malignant aspect of the growth, the line of dissection necessitated repeated injury to the serous coating of the gut. On relaparotomy, not the slightest evidence of adhesions was found. The abdomen appeared healthy, the peritoneum smooth and apparently normal. Exactly the same condition was found in the second case. Here, however, no adhesions were present primarily; the original cause for operation having been bilateral intraligamentous cysts of huge size. Because of these precautions—painstaking covering of all stumps—postoperative ileus has become a rarity.

And now before concluding these remarks, some reference to the postoperative management of the bowels after major abdominal operations upon the internal genital organs cannot be omitted.

We can be very brief, as nothing has occurred in our experience which would cause us to change the views expressed on this subject\* before this Society sixteen years ago. Then, as now, we considered it immaterial whether the bowels are moved early or late in uncomplicated cases, with a preference for leaving them undisturbed until they show signs of reestablished peristalsis.

The present tendency toward conservatism in the management of acute inflammatory disorders makes it unnecessary to refer again to the treatment of these diseases, as our views, which at that time elicited most violent criticism, are now generally accepted.

In postoperative, as well as in all other cases of acute inflammatory disease within the peritoneal cavity due to diseased pelvic organs, drastic measures toward overcoming a paralysis of the intestine caused by the absorption of toxins, are, in the writer's opinion, decidedly contraindicated. Ice and opiates still occupy the foremost place among the means at our disposal in limiting the infection; while a low enema eventually serves to reduce distention without interfering with nature's efforts to establish barriers to the infection.

1063 MADISON AVENUE.

\*"The Question of Early Catharsis After Celiotomy," *New York Journal of Gynecology and Obstetrics*, February, 1894.

## A THIRTY-FIVE POUND UTERINE FIBROID, COMPLICATED BY UMBILICAL HERNIA.

BY

HUBERT A. ROYSTER, M. D.  
Raleigh, N. C.

(With one illustration.)

THE fact that the March, 1910, number of the AMER. JOUR. OBST. contained the report by a New York gynecologist of "an enormous fibroid growth ( $23\frac{1}{2}$  pounds) of the uterus" furnishes an excuse for recording the case herein described. Large fibroids are so common in our clinic at St. Agnes Hospital



Large uterine fibroid and umbilical hernia.

(exclusively for colored patients) that we usually take them as a matter of course. Since September 1, 1909, I have removed three tumors weighing twenty-five pounds or over. The largest of these, forming the subject of this report, gave the following:

*History.*—Mary T., colored, age forty-two, married fourteen years, no children, no miscarriages. Menses have been regular, but painful and free, though lasting only three days. She has

noticed a tumor in her abdomen for seven years. It has been gradually growing, but she thinks it is not quite so large as it was twelve months ago. She has done little work in five years; and takes her bed now and then with "spells of soreness in her stomach."

On *examination* there was found a very large abdominal tumor—hard and nodular. It filled the whole cavity, but was inclined chiefly to the right and upward. A hernial protrusion, the size of two fists, presented at the umbilicus and hung downward. The accompanying photograph shows the side view as the patient lay in her bed.

*Operation.*—September 15, 1909; supravaginal hysterectomy. The tumor was, for the most part, a subperitoneal fibroid springing from the fundus uteri by a thick pedicle. An interstitial mass of the size of an orange was in the uterus itself. There was no special difficulty in the operation. The weight of the tumor after removal was thirty-five pounds.

The umbilical hernia, containing only omentum, was disposed of by excising the redundant skin and lapping over the layers from side to side. The patient had an uninterrupted recovery, and was discharged October 13.

202-203 TUCKER BUILDING.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Concluded from page 660.*

DR. JOSEPH BRETTEAUER read the paper of the evening on  
THE RECTUM AND BOWEL IN THEIR RELATION TO PELVIC DISEASE.\*

### DISCUSSION.

DR. DICKINSON.—Our work lies along such parallel lines that we gynecologists can profit by hearing again one who has put us under many obligations. It has become part of our routine pelvic examination to study the bladder and rectum, and this is inevitable in all obscure pelvic pain. This has become part of gynecology.

DR. JAMES P. TUTTLE then read a paper on the

### RELATIONSHIP BETWEEN RECTAL DISEASES AND THOSE OF THE FEMALE PELVIC ORGANS.

The diseases of the rectum are so frequently associated with the diseases of other organs of the body, sometimes as the cause

\*See original article, p. 777.

and sometimes as the effect, and especially so with those of the reproductive organs, that no one who has had a large experience can have failed to observe it; especially is this true with regard to the reproductive organs of women.

There is no portion of the body that may not be affected functionally or sympathetically by diseases of the rectum or those of the female pelvic organs. The symptoms are one and the same, and it is often with the greatest difficulty that we can make out where the pathological lesion lies.

The propinquity and anatomical relations between these parts would, *a priori*, lead one to anticipate a close relationship in their pathological affections. Traumatism of one are likely to invade the other; inflammations are liable to extend from one to the other directly or through their lymphatic connections; the intimate relationship between the nerve and blood supply of the two sections naturally lead to distinct impressions upon each when the other is affected. So closely are they related in every way that one can never say he has covered the field of diagnosis in any given case of such disease until he has examined both the rectum and the female pelvic organs.

Owing to the very close relationship or proximity of their nerve centers in the spinal cord every irritation of the rectum may have a reflex action on the pelvic organs, causing disarrangement of their functions and sympathetic pains. As instances we may cite the inability to urinate after an operation on the rectum; menstrual irregularities in ulcerations of the rectum; or amenorrhea in cases of periodic hemorrhage from hemorrhoids. On the other hand, diseases of the female pelvic organs have their reflexes just the same way on the rectum and sigmoid flexure. For example, hemorrhoidal congestion in dysmenorrhea; constipation in prolapse of the ovaries; proctitis in parametritis; spasmodic sphincter in cystitis, etc.

The chief symptoms to which I wish to call your attention are pelvic and sacral pains; irregularity of functions; inguinal or iliac tenderness; pains shooting down the legs; reflex pains; digestive disturbances; mental and nervous affections.

*Pelvic and Sacral Pains.*—These symptoms are so commonly associated with both sets of organs that one must determine their cause by elimination, or even sometimes by exploratory operation. We were first taught by Emmet and his followers that lacerations of the cervix were the cause of every pain in the back and pelvis; later it was taught that laceration of the perineum, weakness of the floor of the pelvis, and dragging of the womb upon its supports was the *fons et origo* of such pains. As surgery progressed and the invasion of the peritoneum become less dangerous, the theory was advanced that ovarian or tubal diseases were the cause of all pelvic and sacral pains; and finally when these failed to cure it was advocated from a gynecological point of view that a large or adherent uterus was the cause, and hysterectomy was offered as the one panacea. Many women

were cured, but in many the backaches went on and the functional and reflex disturbances persisted, and the poor patients were in despair until the rise of the proctologist who began to find that the backaches and pelvic pains lay in a mass of congested hemorrhoids, a concealed fissure, an ulceration of the rectum, fecal impaction, or fecal stasis in the sigmoid.

In fact, either or neither of these classes of disease may be the cause of the pelvic or rectal pains. It has been pointed out by Goldthwaite and Taylor that in many cases such pains are due to strain, inflammation, or rheumatism of the iliosacral joints, and their relief may be readily accomplished by fixation and the proper medical or surgical treatment of these joints. Sometimes it is a combination of conditions; especially is this true in injuries following childbirth, where the perineum has not been completely repaired and rectocele exists; and where as the result of straining to empty the bowels fissure or hemorrhoids are produced; or again where the supports of the uterus are weakened and some involution exists, and where an overweighted organ sags down against the rectum—producing congestion, hemorrhoids, and irritability from pressure.

Under such conditions an operation for hemorrhoids will not cure the backache, nor will an operation upon the rectocele, or shortening of the round ligaments, do it either. One should be prepared to remedy both conditions if the patient's physical status will allow it at one operation, and not subject the individual to two or three operations. I perfectly agree with the celebrated dictum, "Worse things can happen a patient than to live to undergo a second operation." At the same time, nothing much worse can happen to the surgeon's reputation than to do an operation, with the assurance that it is going to relieve, and to have the patient recover without any relief, consult another surgeon, and be cured by some minor operation that might easily have been done at the first séance. The question is one of complete diagnosis—the determination of what conditions are causing the symptoms and, whether there be one or two, doing radical and effective work at once.

*Reflex Pains.*—Medical literature is full of instances of remote neuralgic pains relieved by operation on the uterine organs, especially lacerated cervixes and prolapsed ovaries, and by operations upon the rectum especially for fissure. I have relieved pain in the eye, constant headache, and facial neuralgia by the removal of hemorrhoids or the incision or stretching of a fissure. I do not care to go into this subject to-night, but to call your attention to the reflexes of rectal diseases upon the female pelvic organs, and *vice versa*. The conditions which I have found to cause these pains are dysuria, vaginismus, dysmenorrhea; or ulcerations of the rectum, stricture, fissure, cryptitis, or inflammation of the crypts of Morgagni.

Many a neurasthenic, care-worn woman suffering with pelvic pains referred to her uterus and ovaries, tired out with vaginal

tamponing and daily douching of the vagina, has been relieved of all these symptoms by the cure of a rectal ulceration, fissure, or some other of the diseases mentioned. These conditions act not only in a reflex manner, but by causing spasms of the levator ani muscles, which surround the vagina and the neck of the bladder and consequently restrict these parts when in a state of spasm, they act also in causing constipation and its local or physiological sequences. On the other hand, the rectum is very often irritated and kept in a state of pain by such conditions as displacement and adhesions of the uterus, cystitis, and vulvovaginal diseases. Old inflammations around the uterus often cause perirectal strictures, in which the symptoms are referred to the rectum, and yet the original cause and pathological conditions lie in and around the uterus. It is useless to attempt to treat the latter condition through the rectum; it is relieved only through medical and surgical attention to the organ in which the condition arises; and, on the other hand, it is just as useless to attempt to treat those vague and indefinite pains of the pelvic organs due to rectal anomalies or pathological conditions by operation and treatment through the vagina. The differentiation between actual and reflex pain, the determination of the seat of the pathological condition is the one desideratum to learn the cause of our patient's complaint, and then usually our course of action is clear.

*Pains Shooting down the Legs.*—One type of reflex pains to which reference has been often made in medical literature is pain shooting down the legs. It is common to diseases both of the rectum and female pelvic organs. Hilton has said that such pains in the left leg are almost pathognomonic of rectal ulcers or fissures. It seems to me that his experience must have been coincidences, for in my own, I believe, I have seen just as many pains in the right leg as in the left; and as a large majority of fissures are in the anterior or posterior commissure, I can see no reason why these pains should shoot down the left leg any more than the right. I have paid more attention to this in recent years and I am convinced that one should not eliminate the rectum because the pains are in the right leg; nor do I believe that we should conclude that a pain shooting down the left leg is conclusive evidence of disease of the rectum. A tumor of the uterus or uterine organs pressing upon the nerves as they extend down from the spinal canal to their exit from the pelvis may cause just such pains in the legs, either right or left, as are attributed to diseases of the rectum. We should never, therefore, give opinion as to the cause or origin of such pains until both sets of organs have been carefully examined.

*Irregularity of Functions.*—The functions of either the rectum or the female pelvic organs may be disturbed by various causes, especially by disease in one or the other. The functions of the rectum are absorption of the fluid contents of the feces, the furnishing of a reservoir for the detritus of the alimentary canal,

and to extrude this from the system at more or less regular periods. All of these functions may be influenced, interfered with, or suppressed entirely by diseases of the female pelvic organs. The diseases which chiefly act in this way are hypertrophied or displaced uteri, tumors, and cysts of the uterus and ovaries, which in a mechanical way may retard or prevent the passing of fecal matter by causing pressure upon the intestines; (rare) by producing inflammation or irritation, and arrest of peristalsis; by pushing the gut to one side—upward or downward—and causing a flexure or angulation; and adhesions—all of which interfere with the functions of the gut and at times prevent them altogether. Prolapsed and inflamed ovaries and tubes by reflex action often arrest the peristalsis of the gut. Nature is self-protecting, and where the passage of the fecal matter through the gut presses upon the inflamed or tender organs she resists, and often the collection of feces in the descending colon is nothing more than the evidence of Nature preventing pressure upon the inflamed organs of the pelvis.

Adhesions of the gut through inflammation of the uterus and its appendages are common causes of interference with the intestinal functions. One chief cause of purely rectal disturbances in women is rectocele, a condition which from its name would be more properly relegated to rectal surgery than to the field of the gynecologists; a condition which it seems to me is not well understood by the average operating surgeon. When I state that within one month I have seen six cases of severe rectal disturbance due solely to rectocele, and all in women who had been operated upon for lacerated perineum, one of them as many as three times, you will understand the import of this remark. The restoration of the perineum only will not cure rectocele, and, until the gynecologists and obstetricians recognize the fact that the lesion is as much in the rectal as in the vaginal wall they will find their patients drifting to the proctologist's office for relief of rectal disturbances which never should have occurred.

The functions of the female genital organs are micturition, menstruation, procreation, and parturition. Micturition is affected by traumatism, acute inflammation, fissures, ulcerations, and large tumors of the rectum. Menstruation is influenced by constipation, which delays it; diarrhea, which hastens it; by bleeding hemorrhoids, which may prevent it or act in a vicarious manner; and by all the other rectal conditions which cause discharge, hemorrhage, or profound impression on the nervous system. Procreation may be prevented by fecal stasis or impaction pressing upon the uterus from above and causing an acute flexure in the cervix; by endometritis or vaginitis due to colon bacillus infection passing by osmosis from one organ to the other; or it may be intercepted or aborted by diarrhea or dysentery; straining at stool due to stricture, inflammation, ulceration, fissure, or obstruction of the rectum.

Parturition may be influenced by constipation, by proctoliths or other foreign bodies in the rectum, by inflammation of the rectum causing distress and arrest of the labor pains when the head presses down upon this organ; and by hypertrophy of the levator and muscles which prevents the relaxation of the perineum, arrests the head, and is often the direct cause of laceration. It may be absolutely prevented by a large polypoid, fibroid, or other tumor of the rectum.

*Inguinal or Iliac Tenderness or Pain.*—It is a common assumption that tenderness or pains in the iliac regions made worse by walking, deep pressure, or palpation through the vagina are due to tubal, uterine, or ovarian diseases. I have seen operations done for the removal of these organs when there was practically no organic disease to account for the pain. In recent years we have come to know that such pain and tenderness are frequently associated with inflammation of the sigmoid, such as sigmoiditis, mesosigmoiditis, diverticulitis, or tumors of the gut—these conditions are often overlooked in operating on the uterine organs. It is not even always necessary that there should be inflammation, for the symptoms may be produced by angulations of the bowel, with a fecal accumulation above, and pressure upon the female pelvic organs. These same conditions I have found to account for the dragging pains associated with, and often falsely attributed to, “falling of the womb.”

Accumulation of feces in the sigmoid or descending colon has often been mistaken for pelvic, ovarian, or uterine tumors. Operation should never be done for such pains and such tumors until such a possibility has been eliminated. The inflammations of the sigmoid may spread to the uterus and ovaries, causing adhesions to, and involvement of, these organs. On the other hand, diseases of the reproductive organs may be the original seat of disease and the bowel be secondarily involved, causing arrest of its function, and acting in a circle as it were, keeping up the pain. The right procedure in such cases is to determine beforehand, if possible, by rectal and vaginal exploration which set of organs is at fault, and, if exploratory operation is necessary to consider the condition of both the intestines and the pelvic organs well before operating upon either. In other words, let the gynecologists be posted as to the abnormalities and diseases of the intestines, and the proctologists be well informed as to the pathological condition of the uterine organs, in order that the patient may be justified in her resort to surgery, that she may not recover from one operation only to be subjected to another when all may have been done for her at once.

*Nervous and Mental Disturbances.*—There is no doubt that many of the nervous and mental disturbances in women are due to affections of the uterine organs. A few years since a wave of gynecological enthusiasm passed through all the insane hospitals of this country and Europe. Operating surgeons were appointed as consultants and attendants to these institutions, and thousands

of women were ovariectomized or otherwise operated upon with the hope of quieting their disturbed minds and restoring them to reason. The results of this procedure have not been all that could be hoped for: some have been benefited and some cured, but many more have failed. More recently the theory of autotoxemia has become prominent, and to-day we are of the impression that more can be done by better attention to the lower end of the intestinal canal than by ovariectomy, hysterectomy, etc. I do not mean to depreciate the effects of proper gynecology in nervous and mental diseases, but I do wish to emphasize the importance of first obtaining what benefit is possible from nonsurgical methods or less radical methods if surgery is necessary in the treatment of this class of cases.

The influence of the absorption of putrid matter from the intestinal canal upon the nervous and mental system has long ago been pointed out, and it is becoming more and more acknowledged by neurologists at the present time. Hypochondria and melancholia are in many cases nothing more than the result of such absorption, and as this proceeds the resistive power of the patient decreases, the pelvic pains are magnified, the interference of the functions appear, and the whole category of nervous exhaustion and true melancholy develops. Many of these patients, no doubt, have uterine disorders and ovarian pathological conditions, but these are secondary and not the cause of the mental condition. It is not necessary to go to the asylums to find such cases; our cities are full of tired, depressed, melancholic women, who are being treated by tampons and douches, for backaches and pelvic pains which are due to fecal stasis—imperfect emptying of the bowel and other rectal conditions. The problem which presents itself to us is the differentiation between the conditions, the seeding out and determining whether the rectal, sigmoidal, or pelvic organs are at fault, and to do this there must be a passing of the specialties. In other words, the proctologist must be a gynecologist, in diagnosis at least, and the gynecologist must be a proctologist.

#### DISCUSSION.

DR. DICKINSON.—The Society is greatly indebted to our guest for his clear and interesting paper. The matter is before you for discussion.

DR. KRUG.—I came here to listen, not to speak. The ground has been covered thoroughly and I think it would be quite difficult for me to try and bring out any new points. I consider it a compliment that there is so very little to be gainsaid.

DR. HIRAM N. VINEBERG.—Dr. Tuttle brought out the point that the true function of the rectum consists in its being a receptacle for the feces. Now, how are we to tell in a given case that the feces sojourn for too long a time in the receptacle? We all recognize that in marked rectocele the feces are not easily expelled

from the rectum and are abnormally arrested in that part of the alimentary canal, but in the absence of that condition it may be a nice point to determine, in an obscure case, whether the symptoms be due to too long a delay of the feces in the rectum. On the other hand, I think too much importance is attached to the lodgment of the feces in the lower rectum as a cause of various disturbances. In women continuous impaction of hardened feces in the rectum will in time bring about uterine displacement with its train of symptoms. Still one frequently sees women who for years may not have a movement of the bowels oftener than once every two or three days without any apparent ill effects. The cases one sometimes sees in the puerperium in which the temperature shoots up to  $106^{\circ}$  and as suddenly drops to normal on emptying of the bowels we know is not due to the accumulation of the feces in the rectum *per se*, but to mechanical interference with the lochial discharges from the uterus.

I would like, also, to ask Dr. Tuttle how he would determine stricture of the upper rectum caused by inflammatory bands in the pelvic cavity, for it seems to me as one views the upper part of rectum with the proctoscope, the patient being in the knee-chest position, there is abundance of room in that part of the rectum and that it would require more than an ordinary inflammatory strand in the Douglas sac to so constrict the rectum as to cause a hindrance to the passage of the feces and be the cause of painful defecation. When the latter symptom is present in such conditions is it not more likely that the passage of the fecal mass over the inflammatory mass on the peritoneal surface of the rectum to be the cause of the pain than to a narrowing of the lumen of the gut? I have been using the proctoscope for a number of years, using the Kelly instruments, and with the patient in the knee-chest position I can usually obtain a satisfactory view of the entire rectal canal.

It seems it would be difficult to distinguish, without opening the abdomen in a given case, that a mass in the right inguinal region is not a perimetritic exudate with pus, but is a pus collection due to a localized sigmoiditis with a probable inflamed diverticulum.

DR. WEST.—Dr. Tuttle has brought out a point which I think to be an extremely important one, and that is the failure oftentimes to repair the levator ani muscle in repair of the perineum. It is my good fortune to have an enormous amount of material pass under my hands at the Post-Graduate Hospital where I have charge of operative gynecology upon the living subject. I find a good many cases often operated upon by different men come back with a rectocele and with separation of the levator ani which is never apparently in that way united. The work has been done superficially and the levator ani muscle has remained untouched. I think it behooves us to look into the methods which we use because a good many of these cases come from very good men—gynecologists well known. I have had two cases

only recently who were operated upon by well-known men where the operation was an absolute failure because they did not get the levator ani muscle. I only wish to emphasize in this way a point which I believe to be extremely important.

DR. WYLIE.—I read, in 1882, a paper on the dynamics of the pelvic organs. I brought out the fact that with complete laceration there was no displacement of the generative organs at all, but if the perineum was torn internally, and the sphincter ani was stretched, even if you sew up the perineum, you still have a rectocele form, because the fecal matter was not deflected backward out to the anus. I tried to make a distinction between what I called the anus portion of the gut between the external sphincter ani proper and the levator ani. If this inner portion is torn away from the perineum the rectum does not act normally. Therefore it descends and pushes out through the vaginal outlet. The effect of that is to pull on the posterior wall of the vagina; that throws the fundus backward and the straining at stool forces the uterus out. Then, if the patient becomes constipated, this pouch receives all the force of that strain and it stretches more and more, so we have rectocele, prolapse of the uterus, etc., all pending. This mechanical fact has never been recognized and considered in the operation on the perineum. If I ever failed to cure a rectocele in perineal operations I do not know it. It is simply because I make it a point in sewing up the retracted edges of the levator ani, especially those fibers between the rectum and the vagina. If you secure these tissues and the tissues are fastened there, we cure the rectocele, and sew up the perineum properly, but if I was asked what organ was most important, I would say that the perineum is. We know it is of more importance in the defecation. In fact, if this mechanical fact was recognized and properly treated we almost always could get a good result from the perineum, but not very many of us have studied good mechanics enough to do this.

DR. TUTTLE.—I thank you very much for your kind reception. I will just answer two questions which have been put here. First, I was a little afraid to go over the subject of rectocele in this congregation for fear I would be stepping on somebody's toes. I simply referred to it as a proctologist. They do not come to me until after they are through with this Society (laughter), and I have to keep it very quiet when I do one.

With regard to rectal injections, my attention has been called to the same article. I think the gentleman there had very poor tubes, or had a very poor conception of what position to get the patient in, or he would have succeeded. I quite agree, however, that most of the rectal tubes run up into the rectum and fold up. The average rectal tube is useless. I use what is known as the Murray (?) rectal tube. It is not pointed on the end, rather stiff, and will come back upon itself whenever it begins to fold. If it is folding, it will throw itself right out of the

rectum. No man can persuade me that I can get three quarts into the rectum, and I have to-day put in more than three quarts.

A MEMBER.—Did your tube go through the sigmoid?

DR. TUTTLE.—I know it did. I put the patient in the knee-chest posture and introduced a sigmoidoscope about ten inches. Then I take my rectal tube and pass it; I have no trouble in getting these tubes in; they are twenty-four inches long. Whether they go up into the descending colon or not, I cannot say.

As to the injections, if the patient is put in the knee-chest posture, you certainly can wash out the entire colon. One of the latest methods is that of Hayne (?) which I saw demonstrated last March, in which they take the patient and they let him lie gradually across a table until, in fact, he is on his hands; they then introduce the ordinary funnel into the rectum and pour the water in. So it is a question if the patient is put in the right position whether a tube is necessary at all. We can get just as large injections without the tube as with it.

DR. WYLIE.—I have tried myself to pass the tube in the cadaver before opening and have never seen it pass the sigmoid.

DR. TUTTLE.—The question is, do the injections go up? Does skiagraphy disclose the true condition? To my knowledge I have introduced bismuth into the solution and found a most beautiful picture of the appendix and colon filled with bismuth.

With regard to the point made by Dr. Vineberg, there is only one way of telling whether the rectum has been properly emptied. You might ask, How do you prepare your patient for a rectal examination? They have their ordinary movement without a laxative or enema, come into my office and then I examine and see if they have emptied their rectums, whether after the movement a little fecal matter remains there causing absorption. Then I wash them out and make further examination.

With regard to the strictures produced by an inflammatory mass, they are all of large caliber; they can only be diagnosed by palpation; they do not obstruct; they simply give pain. It is not a stricture of such caliber as to obstruct.

DR. DICKINSON, in the Chair.—I am sure I voice the opinion of the whole Society when I express without a formal vote the thanks of the New York Obstetrical Society to Dr. Tuttle for his instruction to us.

## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON OBSTETRICS AND GYNECOLOGY.

*Meeting of March 24, 1910.*

S. M. BRICKNER, M. D., *in the Chair.*

DR. HERMAN J. BOLDT presented the following specimens:

#### UTERINE TUMOR WITH BILATERAL OVARIAN TUMORS.

The patient, B. K., aged thirty-four years, complained of abdominal distention which had gradually increased during the last three years. In appearance the woman was extremely emaciated; in fact, she looked cachectic. The abdomen was very prominent and seemed like a large abdomen with a little withered woman less than four feet in height attached behind it. Menstruation was regular, at intervals of four weeks and from four to five days' duration, moderate loss of blood. The abdomen was distended by a tumor practically up to the diaphragm, yet there was no interference with respiration. In the lower abdomen the tumor was solid, and bimanually it seemed to be uterine. A positive diagnosis was not made. The problematical diagnosis was: uterine tumor with malignant changes, and ovarian tumor.

On opening the abdomen the adhesions to the tumor were found to be universal, so that, from a technical point of view, the intervention was difficult, particularly the extirpation of the cervix, which was deemed essential, because of the clinical diagnosis of probable malignancy of the uterine tumor. The ovarian tumors contained thick yellow fluid; the left cyst was the larger. The pathologist's diagnosis is: subserous fibromyoma, papillary cystomata, and double hematosalpinx. On March 7 the woman was operated, and on the following day she was out of bed. Since the tenth she has been about on her feet, feeling very well. On the eleventh day she left the hospital, but the plaster scultetus binder was not removed until yesterday. The patient has markedly improved in appearance since operation.

#### FIBROID TUMOR OF THE OVARY.

W. M., aged forty-five years. Abdomen greatly distended with ascitic fluid, and also complained of pain in the lower

abdomen. Menstruation irregular; seven to eight days' duration. The clinical diagnosis was that the great amount of ascites was caused by a pedunculated fibroid, which was freely movable and caused peritoneal irritation. The presence of an interstitial myoma was not considered to bear on that symptom. Because of other conditions it was considered best to employ spinal analgesia, but that was insufficient so that some ether and gas were necessary. The supposed pedunculated fibroid proved to be a fibroid tumor of the left ovary. Whether a degeneration has taken place must be determined by the pathologist, who will get the tumor for examination to-morrow.

#### FIBROMYOMATOUS UTERUS.

The tumor was also removed yesterday from a patient of forty-three years. She complained of pressure symptoms in the lower abdomen, particularly on the right side, and of frequent micturition. It is the generally accepted view that when myomata cause sufficient symptoms for the patient to seek medical advice, that usually there is an indication for removal of the tumor.

#### LARGE OVARIAN CYST MISTAKEN FOR PREGNANCY.

It is likely that because the woman had omitted her menstrual period for seven months, which had never previously occurred, that the erroneous diagnosis of seven months' pregnancy was made. The tumor corresponds to a uterus about that period of gestation. The consultation was requested to determine why no fetal movements had been noticed.

#### DERMOID TUMOR WITH TWISTED PEDICLE.

The pedicle of the tumor was twisted three and a half times from left to right, and caused the sudden intensification of pain in the lower abdomen. Twisting of the pedicle in dermoid tumors is a comparatively rare accident, and for this reason the case is reported.

#### UTERUS WITH ADNEXA REMOVED PER ABDOMEN.

The technical difficulties encountered during the operation may readily be appreciated when the specimen is looked at, particularly the suppurating ovarian tumor with its thickened walls on the right side. It is particularly in such cases that the early mobility of patients is of special value.

#### PAPILLARY CYSTOMA OF THE OVARY.

The specimen well illustrates the objection that is had by most operators, particularly in Germany, to decreasing the size of an ovarian tumor before extirpating it. As a rule, it is preferable to remove tumors in their entirety, if possible.

## DERMOID TUMOR COMPLICATING PREGNANCY AT THE THIRD MONTH.

The tumor was adherent to the floor of the pelvis and it was believed it might interfere with normal delivery. Its removal was followed by a smooth convalescence.

## LARGE CYST-ADENOMA OF THE OVARY.

The tumor had given rise to periodical attacks of pain in the lower abdomen and to some ascites. The patient, aged thirty-six years, had been told that the neoplasm did not require intervention, but it would probably disappear spontaneously. This suggestion was probably caused by an erroneous diagnosis having been made, namely, a fibroid had been diagnosed, which diagnosis was perhaps due to the solid consistency of the greater part of the tumor, associated with profuse menstruation, and unfortunately there are still medical men who believe in the almost invariable benignancy of fibromyomatous tumors.

## UTERUS AND ADNEXA REMOVED PER VAGINAM BECAUSE OF RECURRENT ATTACKS OF PELVEOPERITONITIS AND MENORRHAGIA.

The patient, aged forty years, had been ill several years and treatment had been without beneficent result. The pathological change consists in an increase of the connective tissue and a thickening of the blood-vessels.

## MYOMATOUS UTERUS.

This specimen shows the danger sometimes resulting from the use of a curet to stop the bleeding in some instances of myomata. The tumor took on active inflammatory changes and in a small area perforated the serosa of the uterus, probably by traumatism due to too vigorous use of the curet. The convalescence was tedious.

## DISCUSSION.

DR. BOLDT asked if any members of the Section had noted the occurrence of ascites in cases of ordinary and malignant fibroma of the ovaries.

DR. LEROY BROWN said he had seen one case; the microscopical examination showed that it was a pure fibroma and not malignant.

DR. BROOKS H. WELLS said that apropos of Dr. Boldt's case of a tumor simulating pregnancy, he recently had seen a patient with a degenerating myoma which had deceived many physicians. This patient went to a clinic with the statement that she was pregnant. When examined she was found to have a tumor about the size of a seven months' pregnancy, which the doctor diagnosed as a soft myoma. The woman was sent to

a hospital, the abdomen was opened, and then the operator said, "I've made a mistake; this is a pregnancy," and closed the wound. She was told that she was pregnant and that the baby would be born in a few weeks. After this she visited several obstetricians and surgeons, all but one of whom confirmed her idea of pregnancy, the exception telling her that she had a cyst. Finally she appeared at Dr. Wells' clinic at the New York Polyclinic Hospital and stated that she had carried her baby fourteen months and wondered why it had not been born. Her abdomen was then the size and shape of a full-term pregnancy, and with masses in the tumor that simulated the parts of a child. She was rather a stout woman, her breasts were well developed, but there was no milk secreted. The cervix was hard; there was no violet discoloration at the introitus. A supravaginal hysterectomy was done by Dr. Wells and the tumor removed. The patient was allowed out of bed on the third day and went home on the eighth after operation.

Examination of the tumor after operation showed it to be a myoma undergoing degenerative changes, so that over most of its area it was so soft to palpation as to suggest fluid. On section it was almost diffuent, yellowish-gray in color, with, in parts, rounded masses of normal myoma tissue.

DR. W. GILL WYLIE, speaking in response to Dr. Boldt's question about fibroids causing ascites, did not believe that they did except under exceptional conditions. Fibroids did not seem to interfere with the circulation; when ascites occurred when fibroids were present, it was in all probability due to some complication which caused an irritation of the peritoneum.

Dr. Wylie was especially interested in the presentation of the specimen which showed the injury done by the too vigorous use of the curet. He thought it should be very strongly insisted that we should not curet the uterus when fibroids were present.

DR. C. C. SICHEL reported a number of cases:

#### HEMATOSALPINX.

A woman, forty-one years old, was admitted to the hospital February 8, 1909, complaining of pain in the right side of her abdomen; it was constant and shot down into the right leg. She was constipated and vomited. Her temperature was 99.3°. The abdomen was opened and he found a pedunculated hematosalpinx. This probably contained water at first, and later blood. It was entirely separated from the broad ligament. Not only was it pedunculated, but it was twisted six or seven times. The patient made an uneventful recovery.

#### PYOSALPINX.

A woman, twenty-three years old, was admitted to the hospital December 1. She had an acute double pyosalpinx,

with involvement of the broad ligament. There was sepsis, with high temperature. Both tubes and ovaries were removed, the latter being cystic. The report of this case was of interest because, although particularly careful in tying off the hemorrhagic points, some bleeding occurred. He placed in a small drain. One hour after leaving the hospital the patient was pulseless and the dressings were saturated with blood. It required hot rectal salines and other measures before the pulse could again be detected. She finally made a good recovery.

#### ECTOPIC GESTATION.

A woman, thirty-seven years old, was admitted to the hospital March 19. A diagnosis was made of a ruptured ectopic gestation. She had all the symptoms of an internal hemorrhage, although the radial pulse was felt. Upon opening the abdomen, it was found to be full of blood and clots. The sac was not ruptured, and the only explanation for the hemorrhage was that it came from the fimbriated extremity.

#### RUPTURED PYOSALPINX. DEATH.

The woman entered the hospital with all the symptoms of a diffuse peritonitis; all that was done was to open the abdomen and remove much pus. At autopsy there was found a pus tube which encircled the rectum almost completely and which had ruptured. The condition was one of long standing, and the walls of the tube were very thick.

#### DISCUSSION.

DR. HERMAN J. BOLDT said at one time it was said that a spontaneous rupture in cases of pyosalpinx could not occur; very few cases had been reported in which rupture occurred prior to operation. It would be very interesting to know the cause of the rupture in the case reported by Dr. Sichel.

DR. SICHEL replied that the woman was *in extremis* when seen, and, therefore, no history could be obtained.

#### A CATHETERIZING CYSTO-URETHROSCOPE.

DR. LEO BUERGER presented this instrument, and demonstrated its use on a patient. He had overcome the shortcomings of the Goldschmidt instrument. This new instrument consisted of a sheath, obturator, and telescope. The sheath was provided with a detachable beak, a small fenestra, and two irrigating cocks. An illuminating prism was employed. The advantages of the instrument are: 1. A perfectly normal view of the ureters, trigone, neck of the bladder, and posterior urethra can be obtained; 2. the amount of irrigation is reduced to a minimum; constant irrigation is unnecessary; intermittent injection of a little fluid suffices; 3. the small window makes

rotation of the instrument possible and injury to the urethra is avoided; 4. by means of a new type of prism perfect illumination is provided and upright images are produced.

#### DISCUSSION.

DR. ARTHUR STEIN said, after Dr. Buerger's interesting and instructive demonstration, I wish to add a few remarks concerning urethroscopy in the female. Though I have only used this instrument for three weeks, I have already become convinced of its great value and superiority over other instruments of similar kind.

Up until the present time Valentine's urethroscope was probably the most practical one for the use of the gynecologist. It consists of a tube similar to Kelly's, with a small lamp at its forward end. The field of vision is small and as the instrument becomes hot quickly, an examination for any length of time is impossible, especially as regards the bladder. Another disadvantage of Valentine's instrument is that the physician has to get too close to the patient.

Things are different with Buerger's urethroscope. In this the lamp is so situated that burning is impossible, and thus we can take our time about examining the urethra and can also inspect the *empty* bladder.

As yet I have not had sufficient experience with it to say much concerning the normal and pathological appearance of the urethra. Of one thing, however, I am certain, gonorrheal and other inflammations can be studied with ease; the same is true of tumors of the urethra. Only a few days ago, while examining a case of acute urethritis, I saw a small mucus polyp in the posterior wall of the urethra, and never before have I seen so distinct and large a picture.

Buerger's instrument has still another and important advantage over the others—it makes possible the examination of the absolutely empty bladder, without the slightest annoyance to physician or patient. Heretofore this was impossible, excepting under great difficulties. The instrument is indispensable, therefore, in cases of vesicovaginal fistula. As we need not fear touching the bladder wall with the instrument we are able to study the very act of the bladder emptying itself. The bladder can be partly filled and then the patient may empty it at will. The wall will be seen to contract slowly, the muscle bundles standing out as to give one the impression of a trabeculated bladder. The relaxation can also be observed most beautifully. In short we are in a position to study the physiology of the bladder and in this way will be better able to study its pathology.

One word about the picture itself: it is upright in contradistinction to the usual cystoscopic picture, which is inverted.

Buerger's instrument is of great value and though I have had

but a short experience with it, I feel certain that no one will regret having given it a trial.

#### AN IMPROVED MODIFIED KELLY CYSTOSCOPE.

DR. H. D. FURNISS presented this instrument which carried a small electric light at its inner end.

#### CYSTITIS, AND SO-CALLED CYSTITIS.

DR. ARTHUR STEIN read this paper.\*

#### DISCUSSION.

DR. W. GILL WYLIE emphasized the necessity for a correct diagnosis. A great many cases were sent to him because of supposed bladder trouble when there was no trouble there at all.

DR. HERMAN J. BOLDT believed that all present could say that they had learned something from the instructive paper read by Dr. Stein. A large number of patients who complained of bladder symptoms had no pathological condition demonstrated by the cystoscope. Many of their symptoms were caused by irritation of the nerves supplying the base of the bladder, and in this particular class of cases he found that much good would result from overdistingending the bladder with boric acid solution or water; this procedure gave good results, especially when combined with what he called "vibration of the neck of the bladder."

DR. GUSTAVE SELIGMAN had had a number of cases upon which he had operated and was astonished to find how often there was an involvement of the bladder from the abdominal side; there might be found carcinoma of the bladder, extending to it from without, and yet with no bladder symptoms. As to the frequency of such cases, he would not venture an opinion, but there were many striking instances in which one would expect bladder symptoms, and yet none would be complained of.

Dr. Seligman asked in regard to the frequency of urination not at the end, but at the beginning of pregnancy.

DR. BROOKS H. WELLS wished to emphasize the point which seemed to him to be the crux of the situation—the importance of accurate diagnosis. This was not only important in diseases of the bladder, but was important in every department of gynecology and obstetrics. To make a diagnosis of cystitis it was not only necessary to make a careful bimanual examination of the patient, but it was also necessary to make use of the microscope, the cystoscope, and possibly the ureteral catheter; then, and only then, was one in a position to give an intelligent opinion of the condition. Bladder symptoms could be produced by any condition producing pressure or tension on the structures connected with the base of the bladder; by any condition which

\* See original article, page 769.

caused congestion or pain in the adjacent structures, as the rectum, the parametrium, the tubes, or ovaries.

Dr. Wells reported an interesting case of a woman whom he had recently seen. She complained of very frequent micturition only in the daytime and a diagnosis of cystitis had been made by another physician. The microscopical examination of the urine was negative; the cystoscope showed the bladder to be normal. But the bimanual examination revealed adhesions posterior to the uterus. Dr. Wells said: "There is no cystitis present, but the frequency in micturition is probably caused by the tension of these old adhesions." The patient went home and a woman friend said to her: "It is useless to go to a doctor any more; wear a rubber urinal as I do." The patient did so and the frequent micturition ceased. The point Dr. Wells wished to call attention to was that when we thought there was some slight organic or physical basis for an irritable bladder, there might be some mental or psychical condition behind which should not be overlooked, and *vice versa*.

DR. H. D. FURNISS had seen two or three cases of carcinoma of the bladder, an extension of the disease from the uterus, which had not produced bladder symptoms. Retroversion of the uterus causing bladder symptoms had often been mentioned; in the majority of these cases, however, there would be found a coincident urethritis. He had come to the conclusion that in many cases of retroversion, pelvic adhesions, and urethritis the cause was the same, usually the gonococcus.

Recently he had seen two cases of severe cystitis due to trouble in the kidney: in both cases there was a mild pyelitis present.

DR. ROBERT L. DICKINSON said the use of the cystoscope had given them the ability to make a diagnosis, but had not done much for them in the way of the treatment of cystitis. Among the conditions that were not cystitis and which gave symptoms, residual urine was worthy of consideration; also varicosities at the base of the bladder and erotism. He thought that this general principle might be enunciated concerning outside tumors and growths and inflammations, etc., that one can do almost anything to any part of the bladder so long as he left the base of the bladder alone.

DR. LEO BUERGER said that not long ago he saw a very interesting case. The patient was a woman, very nervous and erotic; she had been operated upon three years ago, when she was catheterized for the first time, and ever since she had had bladder symptoms. The cystoscope revealed nothing abnormal. She first urinated every two hours, then every hour, and, two years after the operation, she urinated every fifteen minutes. The urine was perfectly clear. She was again cystoscoped and there was found at the sphincter, corresponding to the trigone, what he thought at first to be a papilloma. However, it was found that on either side there were two small granu-

lations. These were cauterized with the electrocautery and gradual dilatation was employed for four weeks and the patient had been relieved of her symptoms. This case illustrated how a small lesion which under ordinary circumstances should not cause trouble could give rise to distressing symptoms.

DR. SAMUEL M. BRICKNER called attention to one condition that had not been mentioned and which would cause frequent micturition, the increasing size of a pregnant uterus. A retroflexed uterus also might cause an unusual frequency in urination as well as great pain.

DR. ARTHUR STEIN, closing the discussion, speaking of irritable bladder, said that some gentlemen had tried to eliminate that expression, because it did not indicate anything.

He agreed with what was stated about the symptoms adhesions gave rise to. He had seen many cases wherein he could find no troubles in the bladder which gave bladder symptoms.

With regard to the frequency of urination at the beginning of pregnancy, he thought this was due to the increased supply of blood to the pelvic organs more than to any influence of nervous reflexes.

With regard to what had been stated about bladder symptoms and retroflexed uteri, he wished to report an interesting case. Several years ago a patient was brought into the hospital with a very much distended abdomen. After several examinations the cervix was detected, but not the body of the uterus because of the presence of a large tumor which bulged into the vagina. The upper part of the tumor extended to the ribs. Attempts were made several times to pass the catheter, but without success. The patient's condition being very serious, something had to be done, and upon opening the abdomen there was found a three months' pregnant uterus which was retroverted. The tumor which reached to the ribs was the overdistended bladder. The bladder was emptied, the uterus was replaced, and an uneventful recovery followed.

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## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS.

**Significance of Atypical Metrorrhagia and Alterations of the Endometrium in Relation to the Development of Malignant Tumors of the Ovary.**—Emilio Alfieri (*Folia Gin.*, 1909, vol. iii, Fasc. III) bases his observations of the relation of atypical metrorrhagia and malignant tumor of the ovary upon the cases seen by him between 1902 and 1908 at the Gynecological Clinic in Pavia. He examined seventy cases of tumor of the ovary or parovarium, fifty-two benign, and 18 malignant, the histories of which are given. His conclusions are that

metrorrhagia accompanying the development of an ovarian tumor, especially after the menopause, is an indication of probable malignity. Still it is not a sufficient element for a positive diagnosis, and may be absent in malignant tumor or present in the benign type. It is not always an indication that the uterus participates in the malignant process, but may be the result of benign hyperplasia, generally glandular, of the endometrium, which accompanies malignant ovarian tumors. This may be caused by the irritating effect on the mucosa of toxic products elaborated by the neoplasm. The association of malignant involvement of the endometrium with that of the ovary is not rare, and may depend on metastasis from the ovary, on secondary involvement from another organ, or on a consecutive proliferative process in both organs at the same time. Every hysterectomy in such a case should be preceded by curettage of the uterus and examination of the materials removed.

**Early Getting-up Among Puerperal Women.**—Robert Müllerheim (*Berl. klin. Woch.*, November 8, 1909) goes over the various experiences of authors who advocate the practice of letting women sit up soon after labor, instead of lying in bed for nine days, and the gymnastic methods allowed while they lie in bed. Some authors allow the women to get up a few hours after labor to pass urine and to sit up a few hours each day, leaving the hospital at the end of the week. Others permit gymnastic exercise, with movements of the legs and the abdominal muscles. The author was decidedly opposed to these measures at first. He now believes that these gymnastic exercises have considerable value. He thinks that he has found a middle course by having constructed a bed which is capable of changing its shape, so that the patient may be raised to a sitting posture without leaving the bed. He believes that however well the early rising of the patient may result in the hospital, where the patient is under careful supervision, it is doubtful whether it will not be harmful when applied in the home among working women, with whom to get out of bed is to go to work. It is doubtful whether weakness of the abdominal muscles, prolapsus, and ptosis of abdominal organs will not ensue after the patient has left the hospital, the eighth or ninth day after labor being too soon to decide on the matter. As to the occurrence of embolism, some authors believe that early rising is a prophylactic against it. Some interesting observations have been made in Java. Here the woman is not allowed to go to bed after labor, and among these women embolism is frequent, as well as prolapsus, anemia, and neurasthenia. Mechanical thrombosis, occurring without fever, in cases of heart and circulatory disturbances, occurs generally in the pelvis and legs. It results from slowing of the circulation, and here muscular movement and increase of circulation are of value. In septic thromboses movement and exercise have serious results. Early rising should be carried out in carefully selected cases only. It entails danger of late infec-

tion through the vaginal discharge, and increases the amount of prolapsus of the abdominal and pelvic organs among working women.

**Technic of Conservative Cesarean Section by the Old Method.**

—A. Couvelaire (*Ann. de gyn. et d'obst.*, Nov., 1909) bases his study of the Cesarean section on fourteen cases of the conservative section practised by himself and the operations seen by him at the Baudelocque Hospital of Paris since 1901. The essential agent of hemostasis after the operation is muscular tonicity of the uterus. A preventive injection of  $\frac{1}{2}$  c.c. of ergotin is of value. A sagittal, median incision will not interfere with the important arterial branches. There need be no fear of making the incision in the placental area. A perfect hemostatic suture after delivery is urgent in case of atony. This suture should insure coaptation of the entire thickness of the uterus; it should be solid enough to resist violent contractions of the uterine muscle and assure hemostasis so perfect that it renders abdominal drainage unnecessary. Uterovaginal drainage should be assured. The inclined position with exteriorization of the uterus insures good protection of the field of operation. Risks of infection can be avoided only by a careful selection of cases which permit the preservation of the uterus. The section, no matter how well made, leaves behind it a cicatrix which is always a weak point in later labors. This is the special danger of the conservative Cesarean section. Only selected cases should be operated upon this way. This operation cannot be indefinitely repeated. Those successfully repeated three or four times are the exception. Repeated operations are liable to complications. The indication exists, in most cases, to prevent a future pregnancy by sterilization.

**Sexuality in the Human Species.**—Moty (*L'Echo mèd. du Nord*, Nov. 14, 1909) considers the production of the child and its maintenance by lactation the principal elements in the production of sexuality in the woman. For this reason she desires to make herself attractive to the man in order to fulfill her desire for children. The sexual desire remains more vague than in man, while that of man is violent and compelling. Beside the instinct of seduction goes that of protection and education. Formerly the number of males exceeded that of females. Now all over Europe the number of females is in excess of the males. This is a reaction of the species for defense against the diminution of births which accompanies the growth of civilization. Female sexuality in girls appears in the form of love of dress, of grace of movement, and seduction; then comes the love of dolls and of animals; next comes modesty combined with a tendency to exhibit herself. Platonic friendships for one another appear in young girls. At puberty the girl begins to have day dreams, her imagination awakes. Physical chastity is much easier for her than for the young man. With the coming of puberty the girl begins to change to the feminine type of

frame: the bones of the pelvis widen and the neck of the femur becomes longer so as to depress the center of gravity of the body. The increase in fat becomes a reservoir of reserve nourishment for the child as well as a means of protection for the genital organs. The ovaries are the fundamental center of the genital system. By destroying them or causing them to atrophy we take away the center of the system. With menstruation comes a temporary congestion of the thyroid gland and suprarenal capsules. In order that the bodily functions should be perfect the thyroid and ovarian secretions must counterbalance one another. With the destruction of the ovary the thyroid function overbalances and the symptoms of the menopause ensue. The woman finds the spermatozoon a sort of tonic whose energy she assimilates. If nature sacrifices man to fecundation, she sacrifices woman to the fetus. During pregnancy the woman should be sustained and fortified to perfect the child and enable perfect lactation to be carried on. The blood of a woman, better supplied with white corpuscles, resists infection more than that of man. The influence of the seasons on conception is shown by the larger number of births during December and January. The more actively sexual a woman becomes the more is her sexuality exalted. Its regression is more rapid than in man, coming at forty-five to fifty.

**Treatment of Puerperal Infection.**—Barsony (*L'Obstétrique*, Nov., 1909) advocates the treatment of puerperal infection by intravenous injections of bichloride of mercury. This is the best and most rapid method of combating the germs which cause the infection. Local treatment aside from vaginal cleansing is useless, and in fact harmful, opening new paths for the entry of the germs. His practical results may be summed up thus: Large doses of mercury are well borne by infected cases when infection is due to saprophytes; the most rapid action occurs in pure pyemia; between the two may be placed lymphangitic septicemia. The first injection consists of five milligrams of corrosive sublimate; if the temperature does not fall this is repeated. This method of treatment is so simple that it can be used anywhere without a special nurse. It is as applicable in the workman's house as to the hospital.

**Two Cases of Alopecia with Arrest of Development Localised on the Cranial Vault.**—Lequeux (*Bull. de la soc. d'Obst. de Paris*, Nov., 1909) describes two cases in which there was an arrest of development of the bones of the cranial vault, accompanied by a lack of skin development over the same area of the scalp and consequent baldness. One child had a marked bone defect and other deformities, and lived but a short time. The other had a small defect, and survived to grow up. The lesions are always between the two fontanels in these cases, and nearer to the posterior one. All degrees of this malformation have been observed, from small spots over which hair was lacking, to large absences of bone covered with only a thin layer of fibrous tissue.

The development of the cranial bones occurs very early in intra-uterine life, from the mesodermic tissue included in the furrow of ectodermic tissue which is pushed into the cavity when the fetus becomes curved on itself. The bones develop in three concentric zones; the central, the reticulated, and the pectinate. The last zone develops most irregularly and is often imperfect in its development, leaving the fontanel of Gerdy, so-called. Truzzi found this 155 times out of 4,309 confinements. If a malady or traumatism occurs at this period of development there may be produced an adhesion, or a momentary compression of the two layers, especially along the median line of the skull, causing a failure of closure of the two plates. This may affect skin alone, or all the layers, including bone.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Bismuth Gauze in Gynecological Work.**—S. Wiener (*Jour. Amer. Med. Assn.*, 1909, liii, 1397) describes the method of preparing bismuth gauze which has been used at Mt. Sinai Hospital as a substitute for iodoform gauze when necessary to leave in the uterus or vagina for several days. An emulsion is made of 2 ounces of bismuth subnitrate, 2 ounces of glycerin, and 1 quart of water. The bismuth and glycerin are very thoroughly mixed, warm water is gradually added and the mixture is continually stirred so as to make a fine emulsion. About twenty-one yards of gauze is passed slowly through an emulsion three times so that it becomes thoroughly soaked, and is then wrung out. After the gauze is dried it is cut into strips of desired size, loosely packed, and sterilized by steam at seven or eight pounds' pressure for thirty minutes. It is odorless, absolutely nontoxic in the quantity used in any one case, much softer, less irritating, and less expensive than iodoform gauze. After incomplete abortions, curettages, plastic operations on the cervix and vagina, and aseptic vaginal celiotomies, it can be left in the vagina for a week, if desirable, and on removal it is still perfectly sweet and odorless. The mucosa is pale and unirritated, and there is no stench. The gauze has not the power of deodorizing foul-smelling pus.

**Statics of the Pelvic Viscera and Relationship to Operative Treatment of Uterovaginal Prolapse.**—G. A. Casalis (*Jour. Obst. Gyn. Brit. Emp.*, 1909, xvi, 233, 293) says that the pelvic viscera are both suspended and supported organs. The "pelvic floor" forms one solid mass separating the pelvic cavity from the exterior, just as the anterior abdominal wall separates the abdominal cavity from the exterior. It includes part of the viscera, as well as the so-called ligaments of the uterus, of which they are an integral part. Relaxation of part or the whole of this fibromuscular, cellular, vascular, and peritoneal diaphragm results in the production of the different forms of pelvic displacements. Relaxation of the upper pelvic segment leads to retro-

deviations and partial uterine descent; that of the lower, to cystocele, colpocele, and rectocele; relaxation of the upper and lower segments, to classical prolapse. The intensification of the combined conditions is productive of hernia of the pelvic contents or total prolapse. Relaxation of the upper pelvic segment is curable by the so-called round-ligament operations, of which Alexander's and Simpson's are the best types. Descensus uteri, especially in middle-aged women, demands ventro-fixation combined with plastic operations on the vagina and perineum. Prolapse should always be operated upon: Classical prolapse, by a combined anterior and posterior colpoperineorrhaphy, with union of the paravaginal tissues in the middle line, and a myorrhaphy of the levator ani and frequently also a ventrofixation; cystocele and rectocele, by the combined perineal and vaginal plastic operations. Hernia of the pelvic contents justifies all these operations, but may best be treated by vaginal or abdominal hysterectomy with suture in the middle line and, if possible, to the abdominal incision of the overstretched perivascular sheaths. In extreme cases, the interposition operation may be tried, or when everything else fails P. Muller's excision of the whole vaginal canal.

**Mechanism of Tubal Occlusion.**—James Young (*Jour. Obst. Gyn. Brit. Emp.*, 1909, xvi, 307) says that analysis of the theories regarding the disappearance of the tubal fimbriæ shows that they fall under one of two headings: (1) Theories which explain the process as being due to an increase in the total length of the tube wall, which, by expanding in an outward direction, becomes projected beyond the tubal fimbriæ. According to the theory of Doran, the increase in length is dependent on the swelling and increase in substance of the tube wall associated with salpingitis, etc. According to Ries, the gliding outward of the "peritoneal ring" over the fimbriæ is rendered possible by the fact that the walls became loose and redundant subsequent to the collapse of a distended tube. (2) The theory of Opitz, which explains the process as due to retraction of the muscular and mucous coats of the tube within the serous coat, and the theory described in this paper, in which the gliding process involves only the mucosa and inner coat of muscle.

It seems probable that the recession of the fimbriæ in cases of hydrosalpinx and tubal pregnancy is dependent on, and occurs during, distention of the ampullary portion of the tube. The tube is inserted at its outer extremity into a slit in the peritoneum. The peritoneal "ring" corresponding to its attachment probably withstands a considerable tension without stretching. This resistance to a stretching force is probably increased when the peritoneum becomes thickened by an inflammatory process extending from the affected tube—in this way the "peritoneal ring" becomes converted into a "peritonic ring." As the consequence of a salpingitis or the congestion associated with tubal pregnancy, the fimbriæ become swollen and, as expansion in an outward direction is prevented by this ring, they become pressed

together; this leads to a functional occlusion of the opening. The mucous membrane of the tube and the inner coat of muscle are intimately adherent the one to the other, and together may be considered to form a well-supported tube lying within a loosely fitting and distensible sheath formed by the outer muscle coat and peritoneum. The inner "tube" is strengthened on its internal aspect by the longitudinal mucous ridges which enable it to withstand, probably with a considerable measure of success any longitudinal strain. For this reason the distending force acting from within will lead to a stretching of the inner portion of the tube wall more in the transverse than in the longitudinal direction. This disproportion between the degrees of expansion of the tube in the different diameters is, however, to a certain extent compensated for by the fact that, with a taut peritoneal ring, the loose fit between the two parts of the tube wall enables the mucosa and inner stratum of muscle to be drawn within the outer muscle layer and peritoneum to take part in the formation of the wall of the tube sac. There must of necessity be present a gliding of the inner portion of the tube over the outer, leading to a withdrawal of the fimbriæ, which are merely exuberant projections of the mucosa beyond the abdominal opening. The writer advances these considerations as an argument in favor of the fact that the retraction of the fimbriæ in a case of tubal pregnancy is established subsequent to, and is dependent on, the structural changes induced in the tube, and is not the result of an inflammatory process preceding the ingrafting of the ovum in the tube wall.

**Operation for Cystocele.**—According to G. R. White (*Jour. Amer. Med. Assn.*, 1909, liii, 1707), a cystocele is caused by the breaking loose of the vagina from the white line of the pelvic fascia. For this reason he has performed the following operation in nineteen cases in the past three years, always with some other plastic operation, and claims no recurrences. The vagina is held open by two retractors, the ischiatic spine located by palpation, and an incision from one to two inches long made through the mucous membrane, parallel to the white line, and extending well up the vagina. The bladder is separated from the vagina by blunt dissection until the spine of the ischium and white line are reached and can be felt uncovered beneath the finger. Hemorrhage can be controlled by a few minutes' pressure. The sutures, which are of chromicized catgut, are passed under guidance of the finger by a Deschamps handle-needle. The first suture goes back of the white line just as it joins the spine of the ischium. The handle-needle is taken off, and each end of the suture threaded on a separate needle; one needle is passed from within out through the median edge of the incision, taking a firm hold on the vagina; the other needle is passed in a similar manner through the lateral edge of the incision. The two ends are then clamped and are ready to be tied. A similar suture is placed half an inch lower down on the white line, and when this is in

place both sutures are tied, bringing the lateral sulcus of the vagina in contact with the white line of the pelvic fascia. Should there be any prolapse at the outlet of the vagina, the incision may be extended down alongside of the urethra and the vagina sutured to the dense fascia covering the pelvic bone. The opposite side is treated in a similar manner, and when both sides are tied the anterior vaginal wall is drawn up in a normal position and has no tendency to sag. The operation is always done in combination with other plastic operations, and does not interfere in any way with them, nor does it minimize the caliber of the vagina, which is a matter of importance should extensive denudations be contemplated for a rectocele.

**Adenomyoma of the Inguinal Portion of the Round Ligament.—**

P. Lecène (*Ann. de Gyn. et d'Obst.*, Dec., 1909) describes a case of adenofibroma of the inguinal portion of the round ligament, in which the tumor, small in size, was developed in the thickness of the abdominal wall, near the deep orifice of the inguinal canal, and fused with the walls of this canal and of the ligament; a diverticulum of peritoneum was adherent to it. It contained within its fibrous masses pseudoglandular epithelial formations analogous to those seen in adenomyomata. The author finds records of only ten similar cases in literature. Adenofibromata of the round ligament are not large, varying in size from that of a nut to that of a hen's egg. They may be unilateral or bilateral; they are situated anywhere in the inguinal canal and are remarkably adherent to the surrounding tissues, never being encapsulated; the color is white to rose red, and they contain cysts, the fluid of which is dark, or semi-hematic; this is due to their vascularity and the result of slight traumatisms to which they are exposed by their situation. They consist of a very vascular connective-tissue framework, enclosing semi-glandular epithelial formations which have a subjacent chorion lined with epithelium; the chorion consists of connective tissue of the young type. The origin of these tumors is referred by the author to the remains of the canal of Wolff. Clinically they are tender, contrasting with simple fibromata of the ligament which are not so; this tenderness is increased at the menstrual period. The treatment should be removable.

**Application of the Antimeningococcic Serum of Flexner to the Treatment of Gonococcic Infection in Woman.—**C. Le Masson (*Ann. de Gyn. et d'Obst.*, Dec., 1909) records the excellent result obtained by him in the treatment of acute gonorrhea in a young woman who had been suffering for six weeks, and has already a large, painful, displaced uterus, and adherent tender adnexa. After two subcutaneous injections of antimeningococcic serum at the end of two weeks the patient was practically cured, the vaginal discharge having disappeared. The analogy of the gonococcus and the meningococcus suggested this use of the serum. The absence of a marked reaction goes to show that there was a pre-established tolerance for the serum. The action

of the serum was so rapid, that at a second bacteriological examination there remained no gonococci in the vaginal discharge.

**Pathology of Chronic Parenchymatous Metritis.**—Luigi Aserto (*Folia Gynaecologica*, vol. iii, Fasc. i., 1901) endeavors to establish the pathology of chronic parenchymatous metritis by examination of fifty-four cases in which the organ had been removed. He divides them into two types; thirty-four of pure metritis, and 23 secondary to some other genital affection. Uteri of the first type were elastic; those of the second were harder. There was a difference between the conditions found in the two types. All were increased in size with thickened walls. This was due to an increase in the amount of uterine muscle in the first type, but with an added increase of connective tissue in the second. In the first type there was exuberance of glandular tissue and alterations of the vessels; in the second there was atrophy of the glands, leukocyte infiltration, and sclerosis of the vessels and stroma. These variations in the lesions will account for the variation in opinion with reference to the condition which is found among those who have written on this subject. In women over forty years of age these changes of sclerotic nature are not pathological. The author believes that the conditions found are not an indication of inflammation. In the vessels the most frequently altered portion is the media; the intima may be thickened, or the adventitia may undergo hypertrophic changes. Between the two types are seen transition forms which show that one passes into the other. The conclusion is that this process is not a true inflammatory one.

**Aerothermotherapy in the Treatment of Acute Peritoneal Septicemia after Operation.**—F. Jayle and H. Dausset (*Presse méd.*, Dec. 29, 1909) find that the indications for treatment of postoperative peritonitis are locally to favor diapedesis, horse serum being one of the best agents; to sustain the heart; to prevent congestion of the lungs; to promote diuresis by injections of physiological salt solution; to combat the infection by collargol or electrargol; and to evacuate the intestine. Heat may be applied to the abdomen by utilizing hot air by an apparatus shaped like a pair of drawers enveloping both legs and the abdomen and heated by an alcohol lamp. This is used for a half hour at a time at first, increased in length to two to four hours. The abdomen should be bare and the wound covered by a simple compress. After the sitting it should be enveloped in hot wadding soaked in hot saline solution. This causes contraction of the intestine and of the bladder, and lessening of the pain.

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### CORRECTION.

On page 515, line 29, of this Journal for March the word "dissemination" should read "desamidation."

# DEPARTMENT OF PEDIATRICS.

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## ORIGINAL COMMUNICATIONS.

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### REPORT OF THREE UNUSUAL CASES OF MENINGITIS.

BY

EFFA V. DAVIS, M. D.,  
Chicago, Ill.

THE susceptibility of hand-fed infants to contract infections and to resist such attacks poorly compared with breast-fed infants has long been commented upon by those interested in the welfare of babies. Those who attempt to rear infants without the aid of breast milk are beset, first, with the greater or less failure on the part of the child's chemical and physiological powers to digest and assimilate the artificial diet, and, next, with intestinal infections, due to the direct introduction of numberless pathogenic germs with such artificial food, owing to the greater exposure of such food to contamination and in part due to the susceptibility of the child from being so poorly fortified by a natural diet.

The present-day methods of modifying artificial food and the possibility of keeping such food free from an abnormal number of infectious germs has placed us in the position where the loss of infant life can be, and is, greatly restricted when such skill and care as we possess in these two directions have been available, but with the child under the best skill in modified diet and with the greatest care in keeping the digestive tract free from infection there is always the danger of such infants' contracting infections through their respiratory tract, and such artificially fed babies show the same feeble power of resisting such infections as in resisting the commonly observed intestinal infections.

An infant doing fairly well on artificial diet is exposed to the influenza or other catarrhal germs from its attendants, and while the adult may recover promptly, the infant may linger on for weeks with a chronic bronchial or nasal infection or be completely overcome by the infection, dying from pneumonia or bronchitis.

The cases here reported demonstrate that even more remote

portions of the anatomy may become involved and the infection become so general as to attack the meninges and produce meningitis, or the middle ear and extend to the deeper sinuses.

The fact that breast-fed infants seldom are overcome by these "colds," as they are commonly termed, in their onset is surely another reason for the family physician to raise his protest against taking the infant, for slight cause, off its mother's milk, unless wet-nursing can be provided, and wet-nursing is a great burden which the average family, having been once initiated into its difficulties, is not willing to undertake often.

The thought also comes in studying the pathology of these cases—may not such conditions as we find in these postmortem findings occur more frequently than is commonly suspected, especially in regard to the influenza bacillus? In the epidemic some twenty years ago, when we recognized in the Russian "La Grippe" a serious infection that resulted in many adult deaths and where general infection resulted with involvement of the various parts of the anatomy, little was done in tracing the germ to its first entry or its final fatal settlement. That cerebrospinal meningitis may be often due to the influenza germ, I believe, is a new and startling idea; that it may appear more frequently in delicate young babies than has heretofore been suspected is also a matter which may properly come up for consideration.

Since seeing the cases here described, I have learned of two or three others in this city that have come to the autopsy table, and the matter takes on the appearance of an epidemic.

CASE I.—E. L., aged seven weeks; a healthy appearing infant girl born at term under my care September 30, 1909, of Swedish parents. Birth weight nine pounds, three and three-fourth ounces.

Mother twenty-three years old, over six feet tall, of robust appearance, born and raised on a farm in Sweden. Her family history is good except for one sister who died of a rheumatic heart affection. The young mother had had rather troublesome varicose veins in both limbs, one side having been operated on by a surgeon before pregnancy took place, and the other side breaking down slightly while carrying her baby. The child was nursed by her mother for three and one-half weeks, doing well, when it was put on modified milk and placed in a foster home, the mother going as a wet nurse. The babe did well for about two weeks on the bottle when it had a slight rise of temperature which fell at once after a cathartic and starvation treatment for thirty-six hours with water and a cautious return to milk.

On November 1, I was summoned by the foster father and

found the child very ill. It had been restless and crying for about two days, and acting so ill that a nearby physician was called who pronounced the case one of bronchitis and prescribed a milk formula and fresh-air treatment. I found the infant with a temperature of 105° F., head retracted and every appearance of an impending convulsion.

On using the rectal thermometer a mass of green, foul-smelling bowel contents filled the diaper and it looked as if the toxic condition might be due to the digestive tract. The pupils were contracted evenly, the face pinched and drawn; the fontanel sunken and the head retracted and considerable general muscular rigidity. A trained nurse was installed and the bowels flushed; a severe convulsion ensued and the child remained in an eclamptic condition with only brief and at times but partial relaxation till death occurred about nine days after the onset of the illness.

The temperature dropped to normal in about twelve hours and remained between 98° and 99° F. most of the time. The fontanel remained depressed more or less, but sometimes flat, never protruding. Pupils gradually showed contraction evenly. The cry was piercing and of cerebral type, occurring less frequently as the disease progressed. Some râles were heard over the chest; breathing most irregular; pulse the same. Handling, even a touch, would often start convulsions which were alarming in their severity and gradually brought the child into a state of coma from which it could not be aroused to take food or drink.

Physical examination could be made but imperfectly, owing to the convulsive state, and treatment was given toward keeping the bowels and kidneys active, baths and saline injection for soothing the nervous irritation, ice-cap to the base of the brain, and careful watching was prescribed. The bowel movements remained green and unnatural in appearance, and the convulsions seemed to leave a semipurulent mucus in the throat, mouth, and nose, and there was slight coughing. The mucus was swabbed out of the nose and throat, but the infant soon refused to swallow and after a few days of rectal feeding died. Just after death a discharge was noticed by the nurse from the right ear.

The intense eclampsia so puzzled me that I succeeded in getting the parents to consent to an autopsy which Dr. D. J. Davis kindly conducted about five hours after death, and I have asked him to report the findings in detail with those of the other two cases reported.

CASE II.—L. B. Infant girl, aged thirteen months. Born September 12, 1908. Admitted to nursery of Chicago Maternity Hospital, September 22, 1908; weight seven pounds six and a half ounces; bottle-fed. Family history not known except that the parents were young. Child did rather poorly the first six months then gained steadily until she weighed sixteen pounds on December 6, 1909. On December 1, she contracted a cold which was going from one to another in the nursery, the attend-

ants as well as the babies being affected. Temperature remained normal and appetite good until December 6, when the child showed signs of serious illness, temperature rising to  $101.6^{\circ}$  and chest findings pointed to bronchopneumonia.

The following day the symptoms became worse, the temperature reached  $103^{\circ}$ , and the child was isolated and treated for pneumonia. She was restless, coughing and tossing about, and crying a good deal. The stools remained normal and she took her food fairly well the first six or seven days of her illness, then she began to refuse it more frequently, acting as if in great pain. She showed from the first a disinclination to have her head moved and resisted handling. She put her hands to her head, frequently covering her eyes from the light, but no retraction of the head was noticed until after the ninth day of her sickness, though she showed from the beginning a slight rigidity of the neck muscles.

On the seventh day the fever remained below  $101^{\circ}$  going down to  $99.4^{\circ}$ , and the chest sounds began to indicate some abatement of the trouble there, but on the ninth day the temperature rose again and ranged between  $105^{\circ}$  and  $101^{\circ}$  F. for the next five days, staying at  $103^{\circ}$  or thereabouts most of the time. Dr. Otto Stein was asked to see the child at about this time and her ears, nose, and throat thoroughly inspected. He reported their condition negative, the throat not even showing any irritation or signs of recent infection.

On December 12, the twelfth day of the illness, the child looked greatly changed and I was called to her at two in the morning to find her in a collapse. She rallied after stimulation with brandy and showed a contraction and rigidity of the right arm and leg. From that date she showed more rigidity, both sides being involved; some retraction of the head; contraction of pupils, though not marked; a slight bulging of the fontanel, and irregular breathing.

The feet showed some edema from contraction, and the bowel movements gave offensive odor. The kidneys were acting about as usual. Mild convulsive attacks came on and lasted from twenty minutes to one-half hour. Dr. Merrill saw the patient with me on the morning of December 14, and the case was removed to the Presbyterian Hospital for lumbar puncture at noon. The little patient failed rapidly and died that night. An autopsy was obtained and conducted by Dr. D. J. Davis. The meningeal symptoms in this case were not marked till the last three days, though the severe depression of the child, with peculiar resistance when her head was moved, caused me to fear meningeal complications from the first, and with the middle-ear case, which I have just reported, fresh in my mind I kept a careful watch for meningitis symptoms. When the signs became clear, I supposed it to be one of those unfortunate endings of a pneumonia with meningitis that are not uncommon even in adults.

CASE III.—C. C. Infant girl, colored, aged seven months; born May 13, 1909. Admitted to the Maternity Hospital Nursery May 27, 1909, weighing five pounds and fifteen ounces. Family history unknown. Child was bottle-fed and did fairly well, weighing over ten pounds when taken sick January 1, 1910. She contracted a cold in the early part of December which troubled her slightly, but not enough to affect her temperature or appetite, her weight chart showing a gain of nearly two pounds for the month of December.

On January 1, her temperature was  $100.2^{\circ}$  in the morning and rose to  $102^{\circ}$  at noon. As she was reported more or less constipated a dose of castor oil was given and her food reduced to gruel for the day. On January 2, her temperature was recorded normal all day, and on January 3;  $100^{\circ}$ , at 9 o'clock A. M. she still looked sick and was quiet, though she had been kept on a reduced ration. At 11 A. M. the nurse reported her temperature  $103^{\circ}$ , and I found her with head retracted, hands clinched, and arms rigid. Breathing short and rapid with râles over chest. Fontanel slightly bulging and every sign of an impending convulsion. A bowel flushing was ordered, but before it was completed a severe convulsion attacked the child and lasted for some time. It left her more or less rigid, and fearing that meningitis was present I called up Dr. Merrill, and got permission to place the baby in the Presbyterian Hospital for treatment. It was taken at once to the hospital and died that night growing rapidly worse each hour and suffering several convulsions. The autopsy revealed a meningitis and some involvement of the respiratory tract, the report of which Dr. D. J. Davis will give with the other cases described.

These three cases resulting so swiftly in death and all presenting such meningeal signs show by postmortem examination to have been each infected no doubt by a different route, but by way of some part of the respiratory tract. Each child was in good resisting condition as to nutrition and general good health when they were attacked. In the nursery where all of these babies were kept preceding their illness were several much more delicate children, and all had been more or less exposed to the influenza colds which prevailed with us during November and December, but no other babies have had any severe illness either of digestive or respiratory tracts.

PATHOLOGICAL REPORT BY D. J. DAVIS, M. D., CHICAGO.

(From the pathological laboratory of Rush Medical College, Chicago.)

CASE I.—E. L. *Autopsy*.—The following anatomic diagnosis is given: acute hemorrhagic pachymeningitis; acute purulent otitis media (bilateral); bronchopneumonia; edema of lungs;

parenchymatous degeneration of the liver and kidneys; uric acid infarcts in both kidneys; acute splenitis.

*Gross Examination.*—The child is cyanotic. The pupils are equal but not dilated, and the sclera are pale blue. The anterior fontanel is distinctly depressed. Posterior lividity is marked; also rigor mortis. The superficial lymph glands are not enlarged. From the right ear there is a small amount of a purulent discharge. No fluid occurs in the peritoneal cavity and the layers of the peritoneum appear normal. The tonsils, larynx, pharynx, and esophagus are not changed. The tracheal mucosa is slightly reddened. Nearly the entire lower lobe of the right lung is consolidated, firm and red, and on pressure pus exudes from the bronchioles. The remainder of this lung and the left lung are edematous. Both pleuræ are smooth and no fluid or adhesions occur in either pleural cavity. The mediastinal lymph glands are not enlarged. The thyroid and thymus glands are normal in size and appearance. The heart and aorta show no change.

The stomach is slightly dilated; the mucosa is unchanged. The intestines contain a small amount of greenish-yellow feces, and the mucosa in places is slightly reddened. The mesenteric lymph glands are very slightly enlarged, but no necrosis or softening is evident. The liver margin in the right mammillary line is 3 cm. below the costal margin and is fairly sharp. The liver substance is rather soft and the lobules are indistinct. The gall-bladder is normal. The pancreas is unchanged. The spleen is firm and considerably enlarged, and the capsule is smooth and dark purplish in color. The cut surface is dark red and firm, and the Malpighian bodies are indistinct. The connective tissue is not increased.

The kidneys contain many uric acid infarcts and the adrenals are normal.

The brain is rather soft, but nowhere is there evidence of hemorrhage or other change in its substance. The pia is slightly congested, but no exudate is present nor do hemorrhages appear. In the dura covering the base of the skull are numerous hemorrhagic areas varying in diameter from one millimeter to several centimeters. These hemorrhages are so extensive as to involve nearly the entire base. They appear to lie in the substance of the dura and do not occur between the dura and the bone or on the surface. No exudate is present anywhere on the dura. The portion covering the cerebrum appears quite normal. The

longitudinal sinus contains a small nonadherent clot and the lateral sinuses are normal. In both tympanic cavities a considerable quantity of thick, greyish, purulent exudate is found. On the right side the tympanic membrane has ruptured permitting a discharge.

**Bacteriologic examination:** The pus from the middle ears was found to contain many streptococci in diplococcus forms and in short chains and in the cultures in addition to streptococci a few staphylococci developed. In the pus obtained from the bronchial tubes numerous streptococci were also found. In cultures of the heart's blood a few colonies of *B. coli* grew and the same were obtained in the cerebrospinal fluid. In the latter were a few polynuclear cells and a considerable number of mononuclears. No bacteria were seen in smears. Cultures of the intestinal contents (lower ileum) gave pure growth of gas producing Gram-negative bacillus.

**Histologically** the lung presents changes characteristic of bronchopneumonia. The alveoli, especially in the region of the bronchioles, contain numerous pus cells and fibrin, and marked congestion is present. The bronchioles are filled with pus and peribronchial infiltration is marked. The sinuses of the spleen contain a large amount of blood in places, suggesting hemorrhage. The liver, myocardium, adrenals, and kidney histologically show no noteworthy changes. Extensive hemorrhages into the dura mater occur involving especially the middle layers. The surface is smooth and no evidence of an inflammatory exudate appears either on the surface or in the substance of the dura. The blood-vessels also appear normal.

In interpreting the above findings it would appear that the bilateral otitis media and bronchopneumonia developed as a consequence of a cold contracted some time previously and due to the streptococcus pyogenes. The infection did not directly invade the cranial cavity as there was no evidence of infection in the region of the roof of the tympanum or about the internal auditory meatus or in the lateral sinuses. The hemorrhages, therefore, in the dura are probably due to the severe toxemia resulting from the streptococcus infection.

*Autopsy Report of Case II (L. B.).*—The autopsy was held one hour after death, and following is the anatomic diagnosis: acute purulent leptomeningitis (influenzal); bronchopneumonia; acute splenitis; cloudy swelling of liver, heart, and kidneys;

acute swelling of peribronchial lymph glands; enlargement of tonsils; fatty liver; divergent strabismus.

*Gross Examination.*—The body is not emaciated. The superficial lymph glands are not enlarged. The pupils are equal and moderately dilated, and the left eye diverges. The sclera are pale blue; no icterus. No discharge occurs from the ears. The anterior fontanel bulges slightly.

In the peritoneal cavity are a few drops of clear fluid; the peritoneal surfaces are normal. The pleural cavities are free from fluid; in the pericardial cavity a few cubic centimeters of slightly turbid fluid occurs.

The tonsils are prominent, slightly enlarged, and the surfaces irregular. No changes in the thyroid or thymus. The larynx is normal. The nasal mucosa is slightly reddened and in the upper part of the nasal cavity a small amount of slightly purulent secretion appears.

The lining of the left pleural cavity is smooth and glistening. The upper lobe of the left lung crepitates throughout, and on section the surface is pink and appears quite normal. The lower lobe, especially in its posterior portion, is dark red and in places does not crepitate. On section regions are seen which are dark red in color and contain numerous small gray areas, about 1 mm. across, from which exudes on pressure a small amount of pus. The tissue from these regions sinks in water. No fibrin appears on gross examination. From the larger bronchial tubes pus may also be expressed.

The right pleura is smooth and glistening everywhere. The right lung in general resembles the left. The apex contains a small slightly depressed region where crepitus is feeble and on section pus exudes from the smaller bronchi, which are surrounded by a narrow light gray zone. The lower part of the upper lobe and the middle lobe show little change. The lower lobe is similar to the lower lobe of the left lung.

The pericardium, the heart, stomach, intestines, and pancreas show no noteworthy changes. The liver shows slight fatty change, and the kidneys on section are dull red, soft, slightly swollen, and the markings are indistinct. The adrenals and genitourinary organs appear normal.

Brain and spinal cord: There is an excess of distinctly turbid cerebrospinal fluid which appears to be under increased pressure. Over the entire surface of the frontal lobes and in large patches over other portions of the brain, especially over

the base, there is a thick greenish-yellow purulent exudate involving the pia mater. As a rule the exudate is more extensive along the blood-vessels and also along the cranial nerves at the base. The vessels are intensely congested, and the convolutions, especially over the frontal lobes, are very much flattened. No hemorrhages appear. The dura is everywhere reddened, and at the base in places thick greenish pus adheres to its surface. The tympanic cavities show no change.

The meninges of the spinal cord are intensely congested and a fibrino-purulent exudate is present throughout the canal.

*Microscopic Examination.*—Sections of the cortex and meninges in the region of the large vessels in the Sylvian fissure show an extensive exudate in the pia. This consists chiefly of polynuclear leukocytes, but in places mononuclear cells are very common. Many of the former are disintegrated. The mononuclear cells have round or oval nuclei and a moderate amount of protoplasm. Plasma cells do not appear. About the blood-vessels the exudate is abundant, but no thrombosis or other significant change is noted. Occasionally a few polynuclear and mononuclear cells are seen in the cortex near the surface and along the small blood-vessels penetrating the brain. No hemorrhages occur. A similar exudate appears on the cerebellum. The polynuclears are less abundant proportionally, and in places large endothelial-like cells are seen. They are not phagocytic. In sections of the spinal cord are seen an extensive exudate in the meninges especially enveloping the roots of the spinal nerves. Polynuclear leukocytes predominate, but many mononuclear cells occur. There is intense congestion of the blood-vessels, but no hemorrhages. A perivascular infiltration is beautifully seen about the small blood-vessels entering the cord from the pia. The central canal appears unchanged.

In sections of the lung many leukocytes are seen in the lumina of the bronchioles, and the walls are intensely congested and infiltrated with round cells and leukocytes. The alveoli in the regions about the bronchioles usually contain exudate consisting of plasma cells, leukocytes, and sometimes fibrin. The tissue everywhere shows marked congestion and some edema. In the kidney leukocytic casts are occasionally found in the tubules, and in general the tubular epithelial cells are swollen and nuclei stain indistinctly. A large amount of fat everywhere is seen in the liver. The myocardium, adrenals, thymus and spleen show no significant changes.

*Bacteriological Report.*—Cerebrospinal fluid: The fluid was distinctly turbid but not bloody. In cover-glass smears were many polynuclear leukocytes and a few large mononuclear cells. Both within and without the leukocytes large numbers of very small bipolar Gram-negative bacilli occurred. Smears of the thick exudate show likewise the same bacilli and numerous leukocytes. Cultures of the fluid show an abundant growth of typical *B. influenzae*. On some plates were one or two colonies of *B. coli*, evidently a contamination, and about these the larger influenza colonies were grouped, showing characteristically their symbiotic property.

Cultures of the heart's blood gave on plates a pure growth of *B. influenzae*. On some plates purposely contaminated numerous larger influenza colonies were grouped around the contaminating organism. In smears and cultures made from the lung exudate *B. influenzae* were found as the predominating organism. A moderate number of pneumococci were also present here. In the pericardial fluid a few influenza bacilli were found in pure culture. The result of the examination of the peritoneal fluid and emulsion of the spleen and peribronchial lymph glands for influenza bacilli were negative. A few colon bacilli, probably a contamination, were recovered from the peritoneal fluid. Careful search was made for influenza bacilli in the nasal secretion, but none were found. Many pus cells were found and a few staphylococci and many saprophytic organisms. The nasal cavities were badly contaminated by material from the stomach.

Serum from the heart's blood obtained at the autopsy did not specifically agglutinate the bacilli from the spinal fluid even in low dilutions. Animals were not highly susceptible. One c.c. of the cerebrospinal fluid injected immediately after the autopsy intraperitoneally into a guinea-pig was not fatal. As a rule, growth from two to three slants of pigeon blood agar given intraperitoneally was required to kill.

*Autopsy Report of Case III (C. C.).*—The autopsy was made six hours after death and the following anatomic diagnosis given; acute fibrino-purulent leptomeningitis; catarrhal bronchitis; acute rhinitis; edema and congestion of the lungs; acute splenitis; fatty liver; cloudy swelling of the heart and kidneys.

The child is a negro female baby and well nourished. Both eyes deviate to the left, and the pupils are equal but dilated. No discharge from the ears. The peritoneal cavity contains

a few drops of clear fluid, and the surfaces appear normal. The pleural cavities contain no fluid and are free from adhesions, and the pericardial cavity contains a few cubic centimeters of clear fluid and is normal. The thymus, thyroid, heart, larynx, and pharynx present no significant changes. The nasal mucosa is covered by a thin layer of tenaceous mucous and is distinctly reddened and edematous. No pus was present in the nasal cavities. The tonsils appear normal. The upper and middle lobes of the right lung crepitate rather feebly, and the lower lobe is nearly airless. The pleural surface is everywhere smooth and glistening and in places dark purple in color. On section the tissue is very moist and bloody, but no regions of consolidation appear. From the bronchial tubes a frothy nonpurulent fluid exudes on pressure. The lobes of the left lung also crepitate everywhere through very feebly in portions of the lower lobe where the tissue is dark red in color and soggy. The cut surface is moist and bloody, and from the smaller bronchi on pressure exudes a distinctly mucinous fluid. No areas suggesting pneumonic consolidation appear. The peribronchial lymph glands are enlarged and dark red in color, but without central softening or other change.

The liver shows slight fatty change, and the spleen is firm, swollen and has indistinct Malpighian bodies. The adrenals and genito-urinary organs show no important changes.

The anterior fontanel tends to bulge slightly, and on opening the skull the cerebrospinal fluid is increased in amount and is distinctly turbid but not bloody. Over the base and surface of the brain especially along the larger blood-vessels is a thin gray fibrino-purulent exudate. In general, the meninges are edematous, and the convolutions are slightly flattened. The dura is deeply congested. In the meninges of the spinal cord a similar exudate is found. The tympanic cavities are both normal.

*Microscopical Examination.*—In sections from the cortex the exudate in the meninges is thin and composed almost entirely of polynuclear cells. In places a few mononuclear cells appear. The blood-vessels are intensely congested, but no hemorrhages are seen. Slight infiltration into the cortex of polynuclear cells occurs in places especially along blood-vessels. Small bacilli can be easily seen in the exudate. The exudate covering the cerebellum is more abundant, but is composed of similar cells. Extending along the spinal cord and enveloping the spinal roots

is this same exudate rich in polynuclear cells. The lumen of the central canal is filled with exudate composed almost entirely of polynuclear cells. Little or no infiltration occurs in the surrounding tissue.

In the lungs there is marked infiltration of round cells and leukocytes into the bronchial mucosa with intense congestion of the blood-vessels. In the surrounding alveoli is a small amount of exudate containing some red cells and leukocytes. Marked edema occurs generally. No extensive hemorrhage. Sections of the nasal mucosa show marked infiltration chiefly of round cells into the mucosa with congestion of the blood-vessels. The peribronchial lymph glands, stomach, intestines, pancreas, adrenals, liver, and kidneys show no noteworthy changes.

*Bacteriological Report.*—The cerebrospinal fluid which contains a large number of polynuclear leukocytes and a few mononuclears in smear preparations shows many small Gram-negative bacilli, both within and without the leukocytes. In culture a pure growth of *B. influenzae* was obtained from the exudate of the brain and spinal cord. From the exudate of the left lung, which contained a considerable number of leukocytes, in culture was obtained many influenza colonies in symbiosis with the few pneumococcus colonies also present. Cultures of the heart's blood also gave pure growth of the influenza bacillus. In the mucus scraped from the nasal mucosa a few colonies of the bacillus was obtained, and in addition many pneumococcus colonies. The pericardial and peritoneal fluids and the bile were sterile.

The homologous serum did not agglutinate the bacillus isolated from the heart's blood even in low dilutions. Growth from two pigeon blood agar slants introduced intravenously into a small rabbit apparently produced no symptoms. The same amount injected intraperitoneally produced death in twenty-four hours, and the bacillus was isolated pure from the peritoneal fluid and the heart's blood.

*General Considerations.*—These two cases of acute meningitis caused by Pfeiffer's bacillus present certain interesting features worthy of note. Its occurrence in young children housed together, the one case shortly following the other, strongly suggests the passibility of this disease being at times contagious. Analogous to this is the occasional occurrence of cases of meningococcic meningitis in the same family. The abundant meningeal

exudate in the first case is in rather striking contrast to the thin, slight exudate in the second. These cases must be considered as septicemias; whether the septicemia precedes the localization in the meninges cannot be determined, but in all probability an initial infection of the upper respiratory tract with *B. influenzae* occurs with subsequent spread to the meninges and the blood. The bacilli are not highly pathogenic for animals, and morphologically and culturally are identical with *B. Influenzae* isolated from other sources.

2314 NORTH CLARK STREET.

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## ACUTE OTITIS MEDIA FROM PEDIATRIC VIEWPOINT.\*

BY

JUDSON P. PENDLETON, M. D.,

Visiting Pediatricist to the New Coney Island Hospital and to Brooklyn  
Central Dispensary,  
Brooklyn.

It occurred to the writer that a consideration of the subject of acute otitis media would be of interest to this Section, for the reason that such a large number of cases are seen by any man who practises much among children, and, therefore, its recognition and early treatment at least must rest with him. In preparing this paper the writer has endeavored to select the points that have seemed to him would be of most interest to the general practitioner. If he succeeds in interesting the members of this Section so as to give this subject a full discussion he will feel that he has accomplished his purpose.

A disease occurring so frequently, causing so much suffering, attended by so much danger to life, particularly from its complications, and so often followed by some degree of deafness must ever be of interest.

There are two types of this affection not always distinguishable the one from the other. They are the acute catarrhal and the acute purulent. That the catarrhal form is in most, if not all, cases an infection is now generally accepted. It is needless to say that the purulent form always is. The bacteriology of the two forms is much the same and usually one of the following organisms is present: *Streptococcus*, *staphylococcus*, *pneumococcus*, *bacillus diphtheriae*, *bacillus pyocyaneus*, *Friedlander's bacillus*, the *influenza bacillus*, or mixed infections. The most

\*Read before the Pediatric Section of Kings County Medical Society.

severe forms of the inflammation have the streptococcus or pneumococcus, and the milder forms the staphylococcus.

*Pathology.*—In considering the pathology it is well to have in mind the small size of the cavity and the relatively large surface of mucous membrane because of the many folds in the upper part. This is important for the reason that in the stage of hyperemia and infiltration, *i.e.*, congestion, there may be considerable pressure, even before exudation or increased production of mucus takes place. In some cases there may be resolution at this stage, but if it goes on, then, following the stage of congestion, there is, in the catarrhal type, increased production of mucus and exudation of serum which may fill the whole cavity and cause bulging of the membrane. The membrane becoming infiltrated and eroded gives way under pressure. With the purulent type there are all the above but more intense and, in addition, tissue necrosis and exudation of pus corpuscles. The necrosis may extend to the ossicles and walls of the tympanum and an early rupture of the membrane may result. With this form the inflammation is more intense in the upper part. Here, too, there is more danger of the dreaded extensions to the mastoid or meninges. The Eustachian tube closes early in this form.

*Etiology.*—The etiology of this disease is important from its bearing on the treatment, especially the prophylaxis. Common predisposing causes are the presence of adenoids in the nasopharynx, hypertrophied tonsils or nasal obstruction of any sort. Rheumatism may possibly be a predisposing factor, as also may be the catarrhal dyscrasia or habit, if there be such a thing. Climatic conditions, such as cold and wet, favor it.

Among infrequent causes may be mentioned traumatism as by violence to the parts, as stab wounds, injury from foreign bodies, and forcible syringing for removal of foreign bodies, blows, and by fracture through the temporal bone. It may also be caused by scalding or by irritants in the ear; by sea bathing, and solutions used through the nose to cleanse nose and throat. Sometimes it seems to be caused by exposure to cold and wet, even without a nasopharyngitis. A "head cold" is quite a frequent cause of the catarrhal form—sometimes from blowing some of the discharge into the ear while blowing the nose and sometimes by direct extension of the inflammation. The most common and most important causes, however, are the acute infectious diseases, and four of these stand out prominently; they are measles, scarlet fever, influenza, and diphtheria. The

first three account for a very large percentage of the cases. Others are smallpox, chickenpox, typhoid fever, whooping-cough, syphilis, erysipelas, tuberculosis, cerebrospinal meningitis, mumps, and pneumonia. It might be mentioned here that the association of measles, scarlet fever, or diphtheria with adenoids is particularly liable to produce middle-ear inflammation. Dentition and bad teeth seem at times to bring on this trouble. Of all the cases of scarlet fever, it is probably a low estimate to state that 5 to 10 per cent. have middle-ear inflammation and of measles ten to 15 per cent. When seen as a complication of scarlet fever or diphtheria, the symptoms usually come on from the seventh to the tenth day, rarely much later. With measles it is usually earlier.

*Symptoms.*—Pain and fever are the most constant symptoms. Pain is an important symptom, both on account of its severity and because it is often the symptom that draws attention to the ear; exceptionally, it is slight or absent and may be masked by the symptoms in the primary disease. In very young children it is evidenced by restlessness or by putting the hand to the affected side, or by marked tenderness when the ear is touched. Pain is worse at night and may be severe then and absent during the day. The temperature varies within quite wide limits, and is often irregular and remittent. The moderate cases running between 101° and 103° F. The severer forms may reach 104° or 105° F.; exceptionally it is very slight or absent, more particularly in the catarrhal form in infants or marasmic children. Occasionally fever is about the only symptom present, and it is these cases that escape notice until the discharge comes on. This happens so frequently that in any case of obscure febrile symptoms the ears should be examined. Usually pain and temperature are a fair measure of the severity of the inflammation.

Impairment of hearing varying from slight difficulty to quite marked deafness is present. In the moderate catarrhal cases this clears up, as a rule, soon after a free discharge, and if it persists is usually of a slight degree. In the severer types its persistence may depend largely upon whether proper treatment is established early. Tinnitus and other subjective noises may be complained of by older children. Other symptoms are anorexia, nausea, vomiting, and in some cases marked dullness and apathy. In some cases there are also cerebral symptoms, as severe headache, extreme restlessness, and even delirium and convulsions without

meningitic involvement. Local tenderness in front of the ear is usually present. Objective signs in the membrane are acute redness and congestion of varying degrees. At first there is a lack-lustre, pinkish appearance, which, if it be a severe case, goes on to a more congested condition and a bulging of the membrane. As a rule, if a good light be thrown on the membrane from a head-mirror this condition can be made out by any practitioner. If there has already been a rupture or puncture, there will be a discharge. In the catarrhal form the discharge is rather thick, whitish, and profuse, and usually continues when once established. Later this may become purulent. The purulent may not be so profuse and may become dis-established with an exacerbation of constitutional symptoms. As the case improves it becomes serous in character. At times it may not be possible to locate the rupture, but usually is.

*Diagnosis.*—In most cases the diagnosis is not difficult. Cases of earache occurring in any one of the conditions enumerated under the etiology above given usually means one or the other of these forms of the inflammation of the middle ear. This, together with local appearances mentioned, makes the diagnosis. Fortunately, most of the cases are thus easily diagnosed. In the very young children where they are unable to direct attention to the seat of pain or where pain may be slight or absent, it is more difficult. The history will help some, and if one remembers the ears, there will usually be found some tenderness in front of or about the ear. Having been directed to the ears, one is usually able by gentleness and patience to find some evidence in the appearance of the membrane.

In cases masked by severe symptoms in the primary disease, for instance measles, scarlet fever, diphtheria, or influenza, it is recommended that frequent examinations be made of the ears, remembering that this affection is most likely to come on in from seven to ten days in scarlet fever and earlier in measles. As mentioned before, in obscure febrile diseases there should be an examination of the ear. In case of any doubt, if it be possible secure the services of an otologist. In every case both ears should be examined.

*Prognosis.*—The prognosis in the acute catarrhal form, provided one is sure of the diagnosis, may be given as favorable. In frequently recurring cases, however, it may be followed by serious trouble. In the purulent form the prognosis must be guarded—the much greater danger of destruction of parts of the

middle ear, of its serious complications, and of its running into the chronic form make this type a most serious affection. Those cases coming on in the course of scarlet fever are most serious, as a rule.

*Complications.*—It is mostly from its complications that acute otitis media assumes the importance of being a dangerous disease. They are mastoiditis, meningitis, cerebral abscess, infectious thrombosis of lateral sinus inflammation of the internal ear, and facial nerve paralysis. Here only will be considered very briefly the most common complication—mastoiditis. The mastoid cells are in communication with the epitympanic space through the antrum, so that many of the cases occur by direct extension through the mucous membrane, others probably by some infectious material being forced in through pressure. Scarlet fever, measles, and influenza are the diseases in which this complication occurs most frequently. One authority states that influenza has more mastoid inflammations than all others, but I think this statement will be questioned by others. To give an idea of the frequency of this complication—quoting figures from a paper by Dr. Alderton—in 178 cases of scarlet-fever otitis there were forty-seven cases (26 per cent.) that required operation, and probably there were more than that inflamed; and of 326 cases of otitis media due to measles thirty-four cases or 10 per cent. required operation. Often the course of otitis media and mastoiditis is continuous; sometimes there is remission, the otitic condition improving for a time when suddenly there is a return of pain, rise of temperature, etc. In some cases where the otitis seems to improve and gets to a certain point and stops, the child seems ill, has temperature discharge and anorexia, etc. The local symptoms are pain, tenderness above and behind the ear and at the tip of the mastoid, also there may be a characteristic swelling which makes the ears stand out from the head. These cases should be seen by the otologist and treatment left to him.

*Treatment.*—*Prophylaxis* consists in the removal of adenoids, hypertrophied tonsils, or other obstructions that promote nasopharyngeal catarrh, also in treatment for naso-pharyngeal catarrh when present; in the means to prevent colds, such as cold sponging and building up with tonics and fresh air; in the use of mild alkaline sprays in measles, scarlet fever, influenza, and any form of nasal pharyngitis to cleanse nose and throat, and also in the use in these diseases of menthol-camphor and eucalyptol in

albolene dropped with a dropper into the nose and allowed to go back in the throat. (In spraying the nose and throat at any time care should be taken not to blow the nose until all the fluid has all run out; or, if the nasal passage is free, it may be gently blown out without holding the nose. The same may be said of the large amount of discharge.) It consists also in the care of the bowels, skin, kidneys, and general health. *Treatment* of an attack varies with the stage at which it is seen. If seen early, it consists of the use of a saline cathartic; blood-letting by leech applied to the tragus (excepting in young or weak children), and the application of dry heat by means of hot-water bag, hot-salt bag, or by aural douche of water at about 110° F. If child will not lie on bag, a small bag may be bound over the ear, first covering that organ with cotton, or a glove-finger filled with hot salt may be put into the ear and bound on. Poultices should not be used. The use of hot oil or laudanum and oil or hot onion is condemned by most ear men as being uncleanly and tending to macerate the tissues. Heat is the only good point it has and that can be better given in other ways. The question of whether other remedies, as cocaine, morphine, and atropin, or carbolic acid and glycerin in weak solutions dropped in the ear, are of any value or of harm seems unsettled, for there are some good men who advocate their use and others who condemn them. From a limited use, the writer has no faith in their ability to relieve any severe earaches or in any respect affect the inflammation.

It is also unsettled whether an opiate should be used in the early stages. The claim that by relieving the pain it may cover up serious inflammation is made. In some cases in children the writer has used Dover's powder, but has felt there was some justice in the above criticism and has only used it where it seemed necessary. Such treatment as above described may stop the inflammation at the stage of congestion. If not, and the pain continues severe or returns after a period of quiescence and the temperature rises and other symptoms come on then, whether the drum be only severely congested or there is fluid and bulging, the proper treatment is to incise the membrane. Should never wait until it ruptures if it can be helped. After douching the ear with an antiseptic solution, as bichloride, 1 to 5,000, or carbolic acid, 1 to 100, and cleaning out thoroughly, then with an aseptic ear-knife, the drum should be incised. This is best left to the otologist. After incision or spontaneous rup-

ture of the membrane, the pain ceases, though temperature may not fall immediately. The discharge then is the object of treatment. Keep clean by syringing the ear with warm carbolic solution, 1 to 100 or 1 to 200, or warm bichloride, 1 to 5000, through a steady-flow syringe without too much pressure. Leave the ears free so that they may drain freely. If drainage becomes imperfect it is usually noted by the rise of temperature, but if it persists after drainage is again established look out for mastoid trouble. Powders are better not used, because they cake up and impede drainage. The discharge clears up in from one to three weeks, as a rule. If it does not, other measures may be tried. Saturated solution of boric acid in alcohol may be tried. Some men advocate peroxide of hydrogen, 1 to 4, but on account of bubbling tendency its use is open to criticism. Politizerization is used both here and in some milder cases earlier. Here, again, special advice by, and treatment from, the otologist is necessary. The acute cases running into chronic and the complications before noted all demand the services of an otologist.

To briefly summarize them:

1. Acute otitis media is a very important disease, and its importance is attested by the following reasons:

- a. Because it is a common affection.
- b. Because it usually means much suffering.
- c. Because it may endanger life.
- d. Because it may seriously impair one's hearing for life.

2. By removal of some of the causes, as adenoids, large tonsils, and other nasal obstructions, and by treating acute and chronic nasal pharyngitis and the same conditions existing in acute infectious diseases, some cases might be prevented.

3. Attention to the general health in cases prone to these attacks is of some importance.

4. Watchfulness for this trouble. In cases of measles, scarlet fever, diphtheria, and influenza, of severe grade, where pain might be masked.

5. Examine the ears in cases of obscure febrile symptoms.

6. In cases of doubt in diagnosis secure an otologist, if possible; also in cases requiring incision of the drum membrane and in cases running into the chronic form or having complications.

7. In very young children diagnosis most difficult.

8. Prognosis better in catarrhal form and worse in virulent forms of scarlet fever.

9. Be suspicious of mastoiditis when there is continuous fever after free drainage.

10. Remember other serious complications.

11. In treatment of attack proper early measures may abort it.

12. Incision is better than rupture, for it heals better and in the severe cases should not be delayed until fluid forms. Finally, appropriate treatment may mean saving the patient's hearing and possibly the patient's life.

95 SIXTH AVENUE.

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## HEART DISEASE IN INFANCY AND CHILDHOOD.\*

### SOME IMPORTANT POINTS FROM A STUDY OF FIFTY CASES.

BY  
D. R. REILLY, M. D.,  
and  
ARCHIBALD D. SMITH, M. D.,

THE cases here presented are taken from the Pediatric Department of the Bushwick and East Brooklyn Dispensary. Practically all occurred among the tenement or poorer class, which does not seek treatment until compelled to do so. In fact, the majority came for some other complaint, and the heart lesion was discovered in the course of routine physical examination. Some were referred by the medical inspectors of the public schools, and would not otherwise have sought treatment. Even the worst cases, those with broken compensation, were able to perform their ordinary duties when coming under treatment. The children were for the most part native born, though many of the parents were foreign born.

*Etiology.*—In the consideration of the etiology of this group one is struck with the number of children who have had some infectious disease. On the other hand, a history of rheumatism could be obtained in only a very small proportion of cases. This is in direct contradiction to the statement that rheumatism is the chief cause of heart disease in children. In making this division, if there were any evidences of rheumatism whatever, it was regarded as the etiological factor, so that the benefit of the doubt goes to rheumatism.

The very general impression that hypertrophied tonsils and

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heart involvement are apt to be associated is not borne out in this series, as there were only three cases with a history of tonsillitis or in which examination showed an abnormal condition of these glands.

*Age.*—The age of the patients varied from five and one-half months to thirteen years.

*Frequency.*—These fifty cases occurred among 1,500 cases of all kinds treated between March, 1907, and June, 1909. They constitute, therefore,  $3 \frac{1}{3}$  per cent. These 1,500 cases were essentially medical, and the figures give a very fair idea of the frequency of heart involvement.

*Heredity.*—In only two cases could a history of heart disease be elicited in the family. In one case the father died of heart trouble, and in the other the maternal grandmother died of heart trouble. The latter patient, a girl of eleven years, had also had chickenpox, measles, scarlet fever, diphtheria, and chorea.

In only two cases could a history of rheumatism be elicited in the family. In one case, a child of twelve years, the mother had had rheumatism, but the child besides having had measles and whooping-cough, was suffering from rheumatism at the time of coming under treatment. In the other case, aged seven and one-half years, the father had had rheumatism, and the child had had whooping-cough four and one-half years previously. She came for treatment for bronchitis, and had no symptoms referable to the heart.

*Occupation.*—Thirty-nine or 78 per cent. of these cases occurred in school children.

*Race.*—Forty-seven of our patients were native born, and three were foreign born. In twenty-seven cases both parents were foreign born, in nine cases one parent was foreign born, and in fourteen cases both parents were native born. The majority of the foreign born parents were natives of Russia, with Austria, Germany, Italy, and Ireland also represented.

*Sex.*—The sexes are nearly equally represented, twenty-six females and twenty-four males. These figures are in striking contrast to those of adult life, where the preponderance is with the males, and argue for the development of heart lesions *after* childhood.

*Infectious Diseases.*—As mentioned before, the preponderance of the cases showing a history of one or more of the infectious diseases is the most striking point in the study of these cases.

Forty-two of the cases had had some infectious disease, or 84 per cent. Excluding all other possible causes from this list of forty-two cases, there are still left twenty-five cases or 50 per cent., in which the infectious diseases were apparently the only deciding cause. Emphasis is to be laid on this point as it is in marked disagreement with most of the text-books where special emphasis is laid on rheumatism. The incidence of the various diseases was as follows: Measles, twenty-seven; whooping-cough, thirteen; diphtheria, thirteen; scarlet fever, ten; pneumonia, eight; chickenpox, seven; mumps and meningitis, one each. Measles occurred alone as an etiological factor in seven cases; scarlet fever alone in two; whooping-cough alone in two; chickenpox alone in two; diphtheria and pneumonia alone in one each. One case, a girl of thirteen years, had had rheumatism twice, chickenpox, diphtheria, mumps, scarlet fever, measles, whooping-cough, chorea, and had had her tonsils and adenoids removed.

*Rheumatism and Chorea.*—Rheumatism was present in the family history or previous personal history in only eight cases, and in no case was it the only etiological factor elicited, and in all but two of these eight cases the patient had suffered from two or more of the acute infectious diseases. In these two cases a previous history of measles was also obtained.

*Congenital.*—Among these fifty cases there were four of congenital heart disease, giving 8 per cent. among the heart cases. If the percentage of congenital hearts is estimated on the basis of the whole fifteen hundred cases it gives nearly 0.3 per cent. The ages varied from five and a half months to nine years, there being two males and two females. The history given was either that the baby had been a blue baby at birth, or that the mother had noticed an abnormal action of the heart since birth.

*Idiopathic.*—Two cases bore all the ear marks of acquired heart disease, but nothing could be learned from the history or from the examination as causative factors, and they are therefore classed as idiopathic for want of a known etiology.

*Clinical Varieties.*—Clinically these patients as they come for treatment can be divided into two separate classes.

1. The patients that come complaining of symptoms referable to the heart. Eleven cases or 22 per cent. belong in this group.

2. The patients who come with no symptoms referable to the heart. This class seeks treatment for some other ailment, and the heart lesion is discovered in the course of a routine examina-

tion. This is the largest group, thirty-nine of our cases, or 78 per cent. falling in it.

*Symptoms.*—Among the patients who sought treatment for heart symptoms the most frequent complaint was pain in the precordial region. This pain was not severe in any of the cases and amounted in the majority to no more than a feeling of distress. Palpitation came next in order of frequency, and dyspnea followed closely. Only one case presented any edema, that being slight of the feet, and associated with dyspnea and a feeling of uneasiness.

Among the patients who came with no symptoms referable to the heart the most frequent complaint was bronchitis. Some were referred by the medical school inspectors of the department of health; others came for gastric or intestinal trouble, tonsillitis and enuresis. The cases referred by the medical school inspectors came with no complaint whatever.

*Physical Signs.*—1. *Size.* Enlargement of the heart was present in thirty-five cases. The greatest enlargement encountered was in a congenital heart that extended one finger to the right of the sternum, above to the upper level of the second rib, and to the left to the mid axillary line, and below to the sixth rib.

In fourteen cases the heart was not enlarged.

In one case, a mitral regurgitation in a boy of ten years, the area of cardiac dullness was diminished. There was no associated emphysema.

2. *Impulse.*—In the majority of the cases the impulse was in the fifth interspace. In the cases with marked cardiac enlargement it was of course displaced outward and sometimes downward. The area over which the impulse could be seen and felt was increased in the worst cases, so that it included nearly the whole of the cardiac area to the left of the sternum. The greatest displacement of the impulse was to the sixth interspace in the anterior axillary line in the congenital heart before mentioned.

3. *Sounds.*—At the apex the first sound of the heart could be heard with more or less distinctness in the majority of the cases in spite of the murmur. In some, and usually in those with the most marked enlargement, the first sound at the apex was obscured by the murmur. At the apex the second sound could always be made out, though sometimes very indistinctly.

At the base the first sound was obscured by the murmur

in those cases in which it was obscured at the apex. There were some exceptions to this, however, where the first sound, though obscured by the murmur at the apex, could be heard more distinctly at the base. The pulmonary was most frequently accentuated over the aortic. The second sound at the base was occasionally obscured by the murmur. Occasionally a reduplicated second sound was heard.

4. *Thrill*.—In nine cases, or 18 per cent., a thrill was felt. Mitral regurgitation furnished most of the cases in which a thrill was felt, with mitral stenosis a close second. The thrill was felt at the apex and corresponded in time of occurrence with the time of the murmur.

5. *Rhythm*.—The rhythm of the heart was affected in only two cases, or 4 per cent. These were both cases of mitral regurgitation.

6. *Murmur*.—The quality of the murmur was blowing in the majority of the cases. The rough, rolling murmur was present in some. The murmurs were soft and loud, low-pitched and high-pitched. In the cases where the transmission of the murmur was at all noticeable, it was not uncommon to hear the murmur all over the chest in front and behind, and even to the right scapular region.

The location of the greatest intensity of the murmur depended on the valve involved.

A functional murmur was present in six cases, and occupied the usual position over the pulmonary valve. It would not be out of place at this time to call attention to the fact that the functional murmur in children is frequently found over the apex.

Distention of the veins of the chest was observed in a few of the cases. One case in which this symptom was prominent had the lesion of mitral regurgitation with marked enlargement of the heart to the right, and was characterized clinically by great dyspnea.

Deformity of the chest consisting in marked bulging of the precordial region was present in some of the cases with very large hearts. In a boy of nine years with a congenital heart the bony chest wall was displaced outward *in toto*, forming a distinct hummock over the greatly enlarged heart.

*Pulse*.—The pulse was not so much affected as one would imagine from the damage to the heart in the majority of the cases. In one case of aortic stenosis the pulse was distinctly small. In the other cases the pulse was of fair size.

The force of the pulse depended on the sounds of the heart. Where these were good, the pulse was of good force.

The frequency of the pulse was, as a rule, increased and bore a direct relation to the severity of the heart lesion.

The rhythm of the pulse was affected as the rhythm of the heart was affected. This has been mentioned above.

The tension of the pulse was, as a rule, less than normal as measured by the finger. It was common to find it soft and easily compressible.

*Diagnosis.*—The diagnosis in each case was made from the physical examination, none of the cases coming to autopsy.

The mitral valve was damaged in forty-one cases, or 82 per cent. Mitral regurgitation alone was present in thirty-six cases, and mitral stenosis alone in five cases.

The aortic valve was damaged in two cases, one each of regurgitation and stenosis. Both the aortic and mitral valve were damaged in two cases.

In one case there was a rapid irregular heart with marked accentuation of the second pulmonary sound, and a reduplication of the second sound at the base, with symptoms of pain in the precordial region and headache. No murmur was present at the first examination. Upon steadying the heart with digitalis, a murmur of mitral regurgitation appeared.

*Congenital Hearts.*—The four congenital hearts showed the greatest degree of cardiac involvement of any of the fifty cases. The chief complaint in the two older cases, four and one-half years and nine years, was shortness of breath. In the two infants, five and one-half and seven months, the mothers stated that the "heart was beating too fast." In one of these latter the pulse rate was 160 per minute.

These four hearts were markedly enlarged in every direction. The dimensions of the largest have been described above.

While the diagnosis of the lesions in congenital heart disease is proverbially difficult, some facts could be established. These facts were the involvement of the pulmonary, aortic, and mitral valves. The involvement of the tricuspid was suspected in one case. Beyond that point the lesions were a matter of conjecture. Whether we were dealing with a patent foramen ovale, a deficient interventricular septum, a patent ductus arteriosus, or a combination of one or more of these lesions could not be definitely determined.

*Prognosis.*—The outcome of all of the cases could not be

learned, this being one of the disadvantages associated with dispensary patients. Where we were able to follow the course of the disease under treatment, even the worst cases were discharged free from symptoms. Although the damage to the heart could not be repaired, compensation was restored. Even the congenital cases were comfortable while under treatment, but if this were omitted for a period of time they would return with the same old complaints.

*Treatment.*—Rest in bed is the most important part of the treatment in restoring the broken compensation of one of these hearts. It should be absolute and uninterrupted, and in some cases continued for a long period of time, weeks and even months.

In many of the cases limitation of the daily activities will suffice.

General tonics, as iron, arsenic, and strychnine did good service in some of the cases.

Digitalis was used with satisfactory results in some cases, but the sheet anchor where heart stimulation was required was tincture of strophanthus, in 2 to 10 minim doses *pro re nata*. The larger dose was given once only when indicated, and followed by a smaller dose.

Where there was evidence that rheumatism was active the salicylates were used.

Strophanthus is better borne by the stomach in children than digitalis, and it has no cumulative effect. Its action is more prompt than digitalis. It slows an overacting heart, prolonging the period of rest. It increases the force of the individual heart beat, and increases the blood pressure by its action from behind, but does not contract the peripheral vessels as digitalis does.

From our experience we are convinced that it is, when indicated, a better drug in children than digitalis.

*Conclusion.*—Attention is especially directed to the following facts:

1. The surprisingly large number of heart lesions among children who have suffered from the infectious diseases. This would argue for the more careful supervision of such patients and is an especially strong argument against the home treatment by parents and other unqualified persons of the acute infectious diseases, especially measles.

2. The large percentage of children suffering from heart disease who present no symptoms (subjective.)

3. The value of routine examination of the chests of all children regardless of their complaint.

4. The favorable prognosis.

The last three are correlated. In view of the favorable prognosis of heart disease in children under treatment, and the large number of children suffering from heart disease but who present no subjective symptoms, it would seem that the careful routine examination of the heart of every child coming under the observation of the physician were an imperative duty, especially since we are aware of the prevalence of long-standing heart trouble in adults and the misery it entails.

97 HALSEY STREET.

## VACCINE TREATMENT OF GONOCOCCUS VULVO-VAGINITIS IN OUT-PATIENT CHILDREN.

BY

B. WALLACE HAMILTON, M. D.,

Physician to Children's Clinic, Presbyterian Hospital Dispensary. Clinical Assistant,  
Department of Pediatrics, Vanderbilt Clinic,  
New York City.

GREAT difficulty in getting any permanent results in out-patients by the ordinary methods of irrigations and instillations of astringents in the treatment of gonococcus vulvo-vaginitis led to the experimental use of antigonococcus vaccine. Considering the bad hygiene and local uncleanness of these cases, the results have been most encouraging, reducing the length of time spent in treating them with local remedies to a marked degree. Microscopical examination of smears from the vaginal secretion all decolorized by Gram's method. All others or doubtful cases are excluded from this report. The doubtful or "suspicious" cases showing many leukocytes in the stained smears of the secretions, are not here considered.

*Age.*—Of the total cases observed the average age was five and one-tenth years; the youngest aged three weeks, the oldest being twelve and a half years.

Following the results of Cole and Meakins\* in the use of vaccine therapy in gonorrheal arthritis in adults, the record of twenty-five cases reported by Butler and Long† and forty-one

\*Treatment of Gonorrheal Arthritis, by Rufus I. Cole and J. C. Meakins. *Johns Hopkins Hospital Bulletin*, June-July, 1907.

†Vaccine Treatment of Gonorrheal Vulvo-vaginitis in Children, by W. J. Butler and J. P. Long. *Jour. A. M. A.*, March 7, 1908.

cases reported by Churchill and Soper,\* the two latter in children confined in hospitals, the same treatment was undertaken in out-patient cases. Eighty-four cases in all have been treated by this method. Owing to the cases being out-patients, and to the lack of time and observing the experience in the use of the vaccine in adults, I omitted taking the opsonic indices, except in a few of my early cases, as I do not deem it necessary, since there does not seem to be any relation of the index to the vaginal discharge. Three separate vaccines were used: 1. Vaccine prepared from a sixteen- to eighteen-hour blood-agar culture from male uretheritis, prepared after the method devised by Dr. R. V. Lamar, of the Rockefeller Institute for Medical Research. The strength of the emulsion was 100 million bacteria to one cubic centimeter. 2. Vaccine from a stock culture at the Presbyterian Hospital belonging to Dr. J. C. Meakins. The strength of this emulsion was also 100 million to one cubic centimeter. 3. Stock vaccines prepared by Parke, Davis & Co., the strengths of which were 100 million and 500 million per cubic centimeter. No attempt was made to use the autogenous or personal vaccine made from the patient's own organism.

The injections were made with an ordinary glass hypodermic syringe into the gluteal muscles under strict asepsis. In using small quantities of the vaccines sterile physiological salt solution was used as a diluent.

The number of vaccinations in the individual cases varied according to the age, severity, and chronicity, the smallest number to accomplish a cure being four, and the greatest number being eighteen.

*Dosage.*—In endeavoring to arrive at some conclusion regarding the dose of vaccine to administer to children, I took one of the older children affected for a long period, whose parents were above the ordinary out-patient in intelligence. This child was eight years of age and had been treated by the irrigation treatment for seven months. The child was put to bed under the constant care of a nurse and 1000 million killed bacteria were injected into her buttock at one dose each day for three days. Her temperature, pulse, and respiration were taken every two hours. She not only showed no rise of temperature, but no local reaction whatever and no subjective symptoms.

\*Inoculation Treatment of Gonorrheal Vulvo-vaginitis in Children, by F. S. Churchill and A. C. Soper. *Jour. A. M. A.*, October 17, 1908.

In the majority of cases, regardless of age (except under six months), I started the treatment by an injection of 50 million every fifth day, increasing the dose 10 million until five injections were given, *i. e.*, 90 million. The intervals were now made seven and ten days before another was given, smears of the remaining secretions being taken and examined by Gram's method each visit after the fifth injection. In most of the acute cases six injections were sufficient for a complete cure. In the cases of long standing it was necessary to use an increased number of injections, bringing the doses up to 200 million. No case was pronounced cured except those free from gonococci by Gram's method, once weekly for four weeks and after two additional examinations at intervals of two weeks. If no organisms were present after these six examinations and no discharge was present, I considered the child cured. I have had nineteen children return to the clinic after a period of three months following the final examination and found no evidences of the infection present.

In a very few cases an extremely slight local reaction took place at the site of the injection, but this in every case subsided in twenty-four hours. The reaction was never sufficient to cause any pain or tenderness. General constitutional disturbance never occurred after any of the injections. Temperature charts were kept of cases, the temperature being taken twice daily by the visiting nurses who visited the patient's home each day while under active treatment. No distinct rise in temperature following an injection was noted in any of the cases. No local treatment whatever was used in any of the cases, except external bathing where excessive secretion was present. No irrigations were given. Of the eighty-four cases treated by vaccines, sixteen were cases of long standing which had been treated by other methods, in the majority of cases permanganate irrigations were previously used. Gonococci were present in all before instituting the vaccine treatment. These latter cases required a larger number of vaccinations and an increased dosage.

In order to appreciate the value of this newer form of vaccine treatment in out-patients it would be fitting to note the intractability of this disease when local means of treatment were used. For the past three years I have kept an accurate record of all cases at the Vanderbilt Clinic of proven vulvo-vaginitis of gonococcus origin and have made a comparative table of the results as follows:

Treatment	Total no. cases	Cured	Uncured	Lost	Per cent.
Irrigation . . . .	260	158	53	49	60
Vaccines . . . . .	84	76	5	3	90

Average length of time under active treatment (260 cases) by the irrigation treatment, 10.1 months.

Average length of time under active treatment (84 cases) by the vaccine treatment, 1.7 months.

Of the eight-four cases to which the vaccines were given, sixteen had been under the irrigation treatment for long periods. Three of these cases were not benefited at all, one did not return, and twelve were cured. Some of the cases which did not respond to the treatment with one vaccine frequently did well on one of the other vaccines. In the cases which were not benefited new strains were tried; increased dosage, less frequent dosage, and more frequent dosage was attempted, but with negative results. The five uncured cases were all over five years of age, two of them being over nine years. Contrary to the findings of some other published results in young infants under one year of age, three cures were obtained by the vaccines, the youngest being three weeks old.

A copy of the following instructions was given to each mother:

### VANDERBILT CLINIC.

#### DEPARTMENT OF DISEASES OF CHILDREN.

#### INSTRUCTIONS FOR TREATMENT OF VULVO-VAGINITIS IN LITTLE CHILDREN.

1. This is a local contagious disease which requires treatment until the physician pronounces the child cured. It sometimes persists for many months.

2. To avoid infecting other members of the family, always wash the hands thoroughly both before and after bathing the parts. The discharge, if carried to the eyes, may cause blindness.

3. The child should sleep alone. Be sure that no one uses any toilet articles, towels, napkins, or wash-cloths used by the patient. All napkins, sheets, underclothing, towels, and wash-cloths should be either boiled or immersed in a solution of creolin (one tablespoonful to a gallon of water) before washing. Bath-tubs, basins, and everything else coming in contact with the patient should also be washed with this solution.

4. It is advisable that all children with this disease should wear a napkin or pad, which should be changed daily.

5. Parents are cautioned not to allow the child to mingle intimately with other little girls. The child should not attend school or day nursery lest other children become infected.

6. Cleanse the parts externally at least four times daily with a solution of borax or boric acid crystals, one teaspoonful to a pint of boiled water.

7. Report to the Clinic every \_\_\_\_\_

#### CONCLUSIONS.

Vaccine therapy has a place in the treatment of this infection in little children for the following reasons:

1. The short time required for a cure in over 85 per cent. of cases.

2. The ease of administration of the vaccine; no special apparatus or knowledge of technic being necessary.

3. The vaccine is apparently harmless when used under aseptic precautions.

4. It is not necessary to take the opsonic index with its complicated technic, although it is perhaps desirable.

5. Doing away with irrigations which direct the child's attention to its genitals, at times encouraging precocious masturbation. The frequent douches necessary in the irrigation treatment will, with the best care and gentleness, produce some injury when continued over a long period of time.

I wish to express my thanks for the clinical cases referred to me from other hospitals and clinics, to Dr. L. E. LaFétra for his courtesy in extending me additional facilities of supplies and nurses at the Vanderbilt Clinic, to Dr. R. V. Lamar, of the Rockefeller Institute for Medical Research, and Dr. J. C. Meakins, of the Presbyterian Hospital, for cultures and vaccines, and finally to the visiting nurses of the clinic, who have made this record of cases possible.

125 WEST SEVENTY-SIXTH STREET.

## TRANSACTIONS OF THE CHICAGO PEDIATRIC SOCIETY.

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*Meeting of January 18, 1910.*

JULIA D. MERRILL, M. D., *in the Chair.*

DR. EFFA V. DAVIS reported

"THREE CASES OF MENINGITIS: HISTORY AND CLINICAL COURSE,"\*  
with the

"BACTERIOLOGY AND PATHOLOGY"

by D. J. DAVIS.

### DISCUSSION.

DR. J. M. DODSON.—I had the opportunity to see the second case reported which was referred to my service.

Lumbar puncture in the second case yielded very little fluid. Unfortunately, the interne who made the puncture allowed this to stand for some time before examining it, and that always vitiates an examination of this sort as the diplococcus is likely to lose its vitality. It is rather interesting, however, that when the fluid was examined on the following day the organism was quite obviously not the diplococcus, but its size and other features suggested the influenza bacillus. As we were preparing to make a second lumbar puncture the child died. A puncture was made immediately after death and a portion of fluid was kept for examination.

One point I would like to emphasize in this connection, and that is the futility of injecting a serum until one knows the cause of the meningitis in the case in hand. There has been some insistence that the Flexner serum should be injected immediately after the first fluid is withdrawn in every case of meningitis. I feel very strongly that this is a mistake; that there is not the urgency that demands the immediate injection of serum that is specific for only one kind of meningitis. One can in a few minutes, as a rule, determine the nature of the invading organism by making an examination of the fluid withdrawn. There are no clinical symptoms which enable us to determine whether the diplococcus of meningitis, the influenza organism, or some other microorganism is concerned. The Flexner serum would be useless for meningitis of this sort, as it

\* See original article, page 811.

would be for any form of meningitis, except the diplococcus meningitis.

Only where conditions preclude a prompt examination of the cerebrospinal fluid withdrawn and the symptoms present point strongly to the diplococcus of Wechselbaum as the etiologic factor, are unjustified in injecting the Flexner serum before a bacteriologic diagnosis has been made.

DR. C. G. GRULEE.—There are a few things about the first case that are interesting. First, there is the question of hemorrhages. Two or three years ago I reported a case of a child, five days old, that died in convulsions. I thought then, and am of the same opinion now, that this was the result of the mother's eclampsia. The child's kidneys were involved, and there was albuminuria. At the autopsy we found marked meningeal hemorrhages. Two of them covered almost half of the cerebral cortex, one on each side of the brain. They were not in the dura, but in the pia.

With respect to the injection of the meningococcic serum, I must say that I agree with Dr. Dodson, although I believe that there are "circumstances which alter cases." The case came under my observation not long ago of a child, with a marked Kernig and a stiff neck. The general condition of the child seemed to be against meningitis, and I told the attending physician that I did not think it was a case of meningitis. He insisted on a lumbar puncture, and we made it. The circumstances were such, however, that twenty-four or thirty-six hours would elapse before we could get a report. Therefore we injected 30 c.c. of Flexner's serum. The case turned out not to have been one of meningitis, but there were no immediate effects from the injection of this amount of serum, which was rather interesting.

Another thing to which I want to call attention is the sign (in meningitis) described by Brudzinski, for which he claims a great deal. He says that on attempting to bend the neck there is flexion of the thigh on the body or of the leg on the thigh, or both, and that this is more constant than the Kernig sign or than the opisthotonos. It would be interesting to determine the correctness of this statement.

DR. A. C. COTTON.—The remarks of Dr. Grulee calling attention to other signs that are noteworthy recall to my mind the sign of the alternating dilatation and contraction of the pupil when extreme flexion is forced on the neck that is rigidly retracted. I have seen this sign in a few cases of meningitis, and I would like to know whether others have seen it and whether they consider it of any value.

In regard to the injection of the antimeningococcic serum, I could conceive of cases where one would be in a position that would justify making an injection. A case in point occurred in my own experience last year. The patient lived at Sterling, Illinois, so that the fluid to be examined had to be brought to

Chicago for examination, which would mean the loss of valuable time to say nothing of the changes which would likely take place in the fluid and which would vitiate the result. I had taken the precaution of carrying some serum with me, and I injected it. Again, it is sometimes very difficult to get the serum within a reasonable time. Considering all things, then, it is advisable always to carry the serum and to use it in every suspicious case. I have never heard of any harm coming from the injection of the serum.

DR. EFFA V. DAVIS (closing the discussion on her part).—The study of the first case was very interesting, because of the youth of the child and the severity of the attack. The child was sick only about ten days, but was very sick from the onset. At the autopsy we found many interesting things, but we did not discover the cause of the convulsions, which were very severe. I had the child under observation all of her life, excepting about a week, when it was under the care of foster parents. So far as I know, she had no influenza when she went into the home, but the discharge from her nose and the bronchial trouble looked as though she had had an infection at some time or other. The thing which concerned me the most was whether we were going to have any more of these cases. We still have some cases of colds which are causing me a little anxiety, although Dr. Davis made smears from the nose and throat of all the children in the nursery, and found them negative.

DR. D. J. DAVIS (closing the discussion).—I have injected human serum into the spinal canal in two cases. One patient did very well and recovered; the other seemed to improve for four or five weeks, when there was a sudden change for the worse and the patient died. Death occurred in this case about six weeks after the second injection of normal human serum.

I also injected one case with normal horse serum, but there was not the least sign of improvement afterward. These three cases were meningococcic infections.

The atrium of infection in these cases of influenzal meningitis is very interesting. It has been rather variable. In some instances the infective agent seemed to have entered the cranial cavity by way of the tympanum. In other cases it seems very certain that the infection extended from the nasal mucosa through the cribriform plate into the cranial cavity. I think that there is very little doubt that this was the avenue of infection in the second case on account of the acute influenzal rhinitis. In other cases, again, there seems to be a marked involvement of the throat, and it is possible that the infection extends from there. It is unusual to find the influenza bacillus on the tonsils. I have studied between one and two hundred cases, but have never isolated this germ in this locality. On the posterior wall of the pharynx, however, and in the thick mucus secretions brought up from the bronchial tubes, it is very common to find the influenza bacillus. Occasionally it may be found in appar-

ently normal throats. It is also commonly found associated with the various infections, such as measles, whooping-cough, chicken-pox, scarlet fever, bronchitis, and tuberculosis.

Another point worthy of emphasis is that these cases are not only infections of the meninges, but are septicemias. Thus far there has not been an opportunity for careful blood culture work before death. The bacilli have in several cases been found in abundance in the heart's blood postmortem, and with proper technic probably can be isolated in every case. That is well shown by animal experiments. If the organisms are injected into the animal in sufficient doses, they quickly enter the circulation and are found there in large numbers.

I made the examinations of the throats of the other children for the purpose of determining whether we were dealing with an epidemic of influenza. Although the cultures were made on pigeon blood agar, I failed to find the influenza bacillus in a single case. Swabs were made from the throat and nose, and these were stirred in plain broth tubes. From these varying quantities, from a drop to two or three centimeters were plated out on pigeon blood agar. A variety of organisms were found, but the predominating organism was the pneumococcus. Streptococci were common in some cases, and staphylococci in others.

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON PEDIATRICS.

*Meeting of March 10, 1910.*

ELI LONG, M. D., *in the Chair.*

### CASE OF SALAAM CONVULSIONS.

DR. SIGMUND ARTHUR AGATSON presented the boy, four years old. The father and mother are first cousins, with physical and mental conditions normal. The child was a premature one at the seventh month; the presentation was cephalic, and the delivery was instrumental, the duration of labor not exceeding three hours. Soon after the birth the baby developed snuffles. The baby was breast-fed for one year, nursing being supplemented by grocery milk from the start. He had measles, and adenoids were removed when he was two years old. During the first six months of his existence the child gave no trouble; then it began to cry frequently unless taken up and carried. During the first year he never had any convulsions. He sat up at eight months and walked at fourteen months. The eruption of the teeth was normal. He never learned to speak.

The present illness began at the age of fourteen months when

the mother noticed that upon awakening the child would get attacks of bowing of the head and trunk. These attacks would recur from eight to ten times a day, but were most marked after sleep. The child's mentality remained at a standstill. His irritability increased. When displeased he would yell and cry, run around the room, jump up and down, and gave the general impression of imbecility. At times he would cry and laugh alternately. He sucked his thumb incessantly. His appetite is good. He has little control over his vesical and anal sphincters.

The child is somewhat undersized, weighing twenty-eight pounds and being well nourished. The head is small, the occipitofrontal measuring nineteen inches. The facies is that of an imbecile. The examination of the thoracic and abdominal organs is negative. The spine shows a fairly marked kyphosis apparently due to weakness of the vertebral muscles. The eyes show a normal fundus.

His attacks of salaam convulsions come on without any premonitory symptoms, whether the patient is standing or sitting. There is a sudden bowing of the head, the chin touching the sternum; simultaneous with this there is an inclination of the trunk to an angle of about 60 degrees when in a sitting posture; the right arm, partially flexed at the elbow, is brought forward in slight abduction until it reaches the level of the shoulder, the palm with fingers extended pointing downward and inward. When the convulsions occur when the child is standing, he will frequently fall forward, his head striking the floor. During the spasm there seems to be a momentary loss of consciousness. Between the spasms the child appears to be contented, at times smiling and clasping his hands in apparent joy. Each attack consists of twenty to thirty spasms, lasting about twenty seconds, at intervals of fifteen to thirty seconds. Toward the end of the attack the spasms are incomplete and may consist of merely a partial bowing of the head. During the last eighteen months, while the patient was under observation, there had been no perceptible improvement at any time, or any diminution in the number of attacks.

#### TETANY IN A CHILD ELEVEN MONTHS OLD.

DR. WILLIAM SHANNON presented a baby, eleven months of age, who was taken to the clinic three and a half weeks ago. The mother stated that the infant had not been doing very well, and was constantly constipated. The child had been breast-fed with the mixed feeding added and occasionally things taken from the table. The mother said that when the baby was ten days old it had meningitis, the convulsions lasting for a few days. Except for these facts, the child was apparently well up to a little over three weeks ago. When Dr. Shannon first saw the patient, while perfectly relaxed at times, as soon as touched the spasm characteristic of tetany was created, with the hands assuming the characteristic position, wrists flexed, and fingers

in the well-known position peculiar to the disease, the thumb extending across the palm, strongly adducted almost to the little finger. Both hands were drawn somewhat to the ulnar side. When the spasms were severe the arms would be flexed on the chest. The feet of this child also assumed the characteristic position, being extended, and the toes completely flexed. During the spasm the plantar surfaces became arched and the dorsum prominent. Two weeks ago the feet became swollen. Another peculiar thing regarding this case was that the infant assumed the position of opisthotonos, that posture being assumed for some time probably because the muscles of the trunk were involved in the spasm. Trousseau's phenomenon was sometimes present and the facial phenomenon was well marked. The knee reflexes were greatly exaggerated. Consciousness appeared to be present at all times. There were no symptoms of brain pressure, and the eyes were always normal except that sometimes they were fixed and staring. The diagnosis of tetany was made because of the exaggerated reflexes, the bilateral spasm, which could be excited or increased by pressure on the nerves, no loss of consciousness, and the presence of gastrointestinal disturbances. The infant was placed on oatmeal and later hominy, etc., with a dose of castor oil and calomel every day. At the end of one week's treatment the child was practically well. The mother, however, neglected the instructions given her and the convulsions came on again. Sometimes the spasms lasted five or ten minutes, and as times at long as an hour or two. Dr. Dana and Dr. Winters had concurred with his diagnosis.

#### CEREBROSPINAL SYPHILIS.

DR. KAUFMAN SCHLIVEK presented this case. The patient was a boy, eleven years old, born in Roumania. The mother had had eleven children and one miscarriage. This child was the ninth. The miscarriage occurred four years before his birth. She has eight other children alive and healthy. One child died at four weeks, cause unknown, and the other died of measles. The father had an ulcer on his penis when the mother was pregnant with this child about four months. He was treated with mercurial ointment.

When four weeks old the patient had what was probably a specific epiphysitis; he was treated with mercurial ointment. He developed normally mentally and physically. He went to school at seven years and was promoted in six months; since then he has not advanced.

His present illness began about three years ago with a gradual onset. The child became listless, could not find his way home, ate food from garbage barrels, complained of headache and poor vision; he always points to one spot on his head as being very painful. When the headaches were severe he vomited frequently. He does not walk well, and has to be assisted up stairs.

The physical examination shows his general condition to be good. His expression is blank; he looks like an imbecile and his speech is not intelligent. He slurs his words. He is hyper-sensitive. The skull is sensitive to pressure and to percussion. The left pupil is larger than the right; they react readily to light. There is no paralysis, no nystagmus, and the fundi are normal. The tongue protrudes to the right. The left facial nerve is weak. There are no enlarged glands. The hands and feet are cold and deeply cyanotic. The skin over the dorsum of the second phalanx of three fingers is infiltrated. There is a double pes planus. The gait is slightly spastic and waddling. Grip is poor. There is no ataxia. Superficial reflexes are present. The reflexes in the upper extremities are exaggerated. The knee jerks are markedly exaggerated. There is a double ankle clonus. There is no Babinski reaction. Sensation to touch, temperature, and pain are not impaired. The Wassermann and Noguchi tests are strongly positive. One week ago he had a transitory paralysis of the right arm and leg. After eight days this subsided, and now the right leg is dragged somewhat and is more spastic. Without the serum test the diagnosis would have been uncertain. The prognosis is bad, for the lesion most probably is a sclerosis, and he has not responded to treatment. He received twenty inunctions of mercury, then had large doses of iodide of potassium, and is now getting both mercury and the iodides. In all cases of disseminate involvement of the nervous system one should suspect lues. The serum test in these cases is of great diagnostic aid.

GONOCOCCUS VULVOVAGINITIS IN CHILDREN WITH RESULTS OF  
VACCINE TREATMENT IN OUT-DOOR PATIENTS.

DR. B. WALLACE HAMILTON read this paper.\*

DISCUSSION.

DR. GODFREY R. PISEK congratulated Dr. Hamilton upon his paper and the results he had recorded. Vulvovaginitis in infancy and childhood was such a bugbear to those who did much work in the hospitals that they were glad to have such an enunciation showing the results, especially the consecutive results, because heretofore their time had been almost wasted in the treatment of these cases. Dr. Pisek said he had used vaccines in the treatment of vulvovaginitis, and that he had probably used all the irrigation treatments mentioned with no success in the great majority of the cases. He never felt that any of the cases were absolutely cured; he felt that after months or years he could take smears and again find the gonococcus, and even this held good in those instances where the child was discharged as cured, basing this statement on the smears. He recalled a serious case of pelvic peritonitis in a child which did

\* See original article, p. 837.

very well with treatment with a stock vaccine. He had lately attempted treating vulvovaginitis by making an autogenous vaccine with the hope of getting better results, but as yet he could not report on these. Cures in these cases should not be recorded until the patients were examined one or two years after treatment. Previous to the vaccine treatment he had used suppositories of 25 per cent. argyrol, having them made large enough to distend the vaginal mucosa; in this way he found that he could at least control the discharge. At the same time he never felt that he had been able to absolutely cure these patients.

Every girl who entered the hospital had a smear made before entering, as well as subsequently. In the way of prophylaxis, the argyrol ointment and suppositories had been as an experiment used even if there was no discharge. Such children invariably went through the hospital care without becoming contaminated. It seemed a horrible thought that these children in the hospital were being exposed to such a contamination in spite of the fact that they were all treated with all the precautions they had been able to devise for their protection. With regard to the amount of vaccine used, he had employed in children as much as five million dead bacteria at a dose and had never seen any bad results from such a large dosage.

DR. L. E. LAFETRA had seen most of these cases and could confirm what Dr. Hamilton had stated in regard to the satisfactory results obtained from the vaccine treatment. For several years he had had at the Vanderbilt Clinic a special class for the treatment of vulvovaginitis patients. This class had been very carefully considered by Dr. Hamilton during the past three years. For three years all forms of irrigation treatment had been employed, and finally Dr. Hamilton resorted to the vaccine treatment for the first time in the dispensary patients, with extremely satisfactory results. They had generally all been cured, although there were many persistent and obstinate cases; about 80 per cent. appeared to be cured. This treatment offered a new hope for these patients who heretofore had been a trying accumulation for any clinic.

ON PRELIMINARY EXAMINATION OF CHILDREN AT THE DISPENSARY,  
AS A MEANS OF PROTECTION AGAINST CONTAGIOUS DISEASES.

DR. SARA WELT-KAKELS.—Being impressed with the inadequate measures taken for the protection against contagious diseases, in 1907 she addressed a communication to the Dispensary Committee of the Mount Sinai Hospital, suggesting the introduction of a preliminary examination of the children applying for treatment, with a view of early detection and exclusion of the contagious cases. Her recommendations were accepted by the committee and referred to Dr. S. S. Goldwater, the superintendent, with power to act. The necessity for such prophylaxis was evident when they considered the large number

of children applying at this institution. During the year 1908, 12,214 children were treated in the medical classes, while the consultations numbered 21,316. From December, 1908, to July 20, 1909, the number of consultations in the children's department amounted to 14,583. The daily average of consultations for both children and adults was 678.11. Children are attended daily at 2 P. M., and at one morning class. The total daily attendance of children at the Mt. Sinai Dispensary is about 150. Since April, 1907, preliminary examination of children applying for admission has been conducted in the afternoon service. The result is that contagious cases are excluded immediately on entering the dispensary before being permitted to mingle with other applicants in the common waiting room. The method employed is that as the mothers and babies enter the dispensary at the main entrance an orderly stationed at the door directs them to a spacious and light recess to the right where the physician is stationed. To avoid crowding if the attendance be large and to avert possible infection, visitors approach through a winding passage way between two railguards in single file. They are examined hastily for the presence of any infectious disease. The time from entering the dispensary to the conclusion of the preliminary examination of each applicant did not take more than from three to five minutes. It would be erroneous to assume that, no matter how perfect the system, infectious diseases would be wholly barred from the waiting-room of the dispensary, but the danger would be considerably lessened. Another advantage of preliminary examination is the detection of conditions demanding immediate treatment, as, for instance, retropharyngeal abscess had been detected a number of times during the preliminary examination. The hospital records showing the number of cases of infectious diseases detected and excluded are proof of the need of this method. Only when the patients were found to be free from contagious diseases were cards marked O. K. given them which had to be presented to the dispensary clerk before cards were issued to the various departments. The time the patient may remain in the dispensary may average from two to three hours and possibly longer. If the child is found to have a contagious disease it is hurried off to an isolation room in the basement where it may receive the necessary attention and, in case of suspected diphtheria, an antitoxin injection; otherwise they are sent home if within walking distance. If they cannot walk the Health Department sends an ambulance to take them home, or to a contagious hospital. This often took several hours and the mother and child would escape if not closely watched. A better plan was in operation in some of the European cities. Children excluded from the dispensary were sent to the observation ward. This was an achievement of recent years. It served to protect the individual from diagnostic errors. One part of the observation ward, set aside for the examination of patients and directly

accessible from the dispensary, consisted of separate cells, which were disinfected after each patient. There was also a room for microscopical examinations and children affected with contagious diseases were sent to pavillions for infectious diseases, while indeterminate cases were kept in the observation ward proper. This method had its prototype in the "Système cellulaire" applied in the Hospital de l'institut Pasteur, where the cells were constructed entirely of glass and iron. In the year 1905 there were 869,866 persons treated in the dispensaries in Manhattan and the number of treatments came to 2,452,814. As Manhattan had a population of 2,112,380, it would appear that in the year 1905 about two out of five inhabitants received medical aid in the dispensaries. This ratio varied slightly from year to year, but the fact remained that they were concerned with the welfare of thousands of the sick poor and were bound to assume greater responsibility. Great progress had been made in hygienic measures in the last ten years in dispensaries and it seemed strange that no attempts had been made to restrict the spread of infectious diseases in waiting rooms. Professor Escherich was much impressed by the prevalent lack of prophylaxis as was borne out when he made the remark that the fear of contracting infectious diseases must be much less in our country than it was in his own, as he had found in our dispensaries no prophylactic measures whatsoever. He did not hesitate to assert that our dispensaries, conducted as many of them were, might to even a greater extent than the public schools aid in the spread of infectious diseases. These conditions should be remedied both on account of the welfare of the patient and on the ground of public policy.

In conclusion Dr. Welt-Kakels submitted the following: 1. There was present an evident lack of prophylaxis in handling contagious diseases at the dispensary. 2. As at present conducted, dispensaries contributed to the dissemination of infectious diseases among the poor, by contact infection in the common waiting room. 3. If not entirely eliminated, the danger of exposure was lessened by the preliminary inspection of children, a prophylactic measure, which aimed at an early detection and exclusion of contagious cases and "suspects" before entering the common waiting-room. 4. Preliminary examinations had been conducted at Mount Sinai Hospital Dispensary since April, 1907, with satisfactory results. 5. Its establishments in similar institutes was required as a sanitary safeguard and on the ground of public economy.

#### DISCUSSION.

DR. GODFREY R. PISEK seconded all that Dr. Welt-Kakels had said in her paper, and said that every precaution should be taken to prevent the spread of infectious diseases in the dispensaries. It was very difficult, however, to exclude such diseases as scarlet

fever, especially in the early stages, by merely a cursory examination. Most of the dispensaries had common drinking cups, and this should be condemned, of course.

DR. F. L. WACHENHEIM said that the Dispensary Staff was very thankful for the procedure she had presented and which had been adopted. There were some details, however, which she had not time to go into sufficiently. The examination of the throats of all the children was very careful; especially were they on the lookout for Koplik's spots; if a child had any redness in the throat, the chest was exposed and examined. These examinations were made by the house staff of the hospital. It was rather interesting to note that in January and July, when a new member of the staff entered upon duty, some cases slipped through; but as time went on, there were fewer and fewer that got through their hands; of course very atypical cases of scarlet fever and measles might do so; still, where he used to see so many he now did so only occasionally. The spread of pertussis could not be stopped in the dispensary. It seemed strange to him that more dispensaries had not adopted such a plan as was now in vogue at Mount Sinai Dispensary; the need of this work had been impressed upon the Board of Directors and it certainly had worked well.

#### HELMINTHIASIS IN CHILDREN.

DR. OSCAR M. SCHLOSS presented a summary of his investigations undertaken to determine the following: 1. The frequency with which intestinal worms were harbored by children between two and twelve years of age; 2. the species of parasite harbored and the relative frequency of their occurrence; 3. the number of cases in which the common intestinal worms were responsible for symptoms, and the nature of the symptoms produced; 4. the occurrence and significance of eosinophilia in infections with the common intestinal worms. Three hundred and ten children were examined; for purposes of convenience they had been divided into two groups, one of thirty, the other of two hundred and eighty.

The first group were made up entirely on the basis of suspicious symptoms, were in no way consecutive and, therefore, were of little statistical importance. These children suffered from obscure gastrointestinal symptoms or nervous disorders which were not explained by the ordinary history or routine physical examination. This group also included four cases in which the parasites had been seen prior to admission. Twelve of this group of thirty harbored intestinal worms.

The second group of examinations were made as nearly consecutive as possible without reference to the presence or absence of symptoms, and eighty, or 28.57 per cent. of the children harbored intestinal worms. There were thirty-one cases of infection with the whip worm without symptoms.

In the case of the other parasites, the most common nervous symptoms were restlessness at night, night cries, and general irritability. The gastrointestinal symptoms varied with the parasite. Abdominal pain was frequent in the case of the thread worm and the dwarf tapeworm; pain in the lower abdomen or the right iliac fossa was common in the thread-worm infections, while with the tapeworm the pain was usually epigastric. Diarrhea was a symptom in only two cases, both infected with the dwarf tapeworm. Constipation was frequent in the thread-worm infections. The symptoms produced by the common intestinal worms were usually mild in character. In the cases which presented symptoms due to helminthiasis, the eosinophile cells were usually above 6 per cent. with the exception of the long-standing infections. In the cases without symptoms eosinophilia was absent. The percentages of the eosinophile cells showed great variations and ranged from 6 to 33 per cent. The diagnosis of intestinal worms could not be accurately based on symptoms or physical examinations. The only satisfactory means of diagnosis is the detection of the parasite in the stools.

#### DISCUSSION.

DR. GODFREY R. PISEK asked in regard to the nationalities of most of the cases, and what relationship the parasites bore to the food ingested; also for what data the reader had in regard to contact of the infected children with domesticated animals. The cases always had an albumen loss eventually producing anemia; also the parasites can act as foreign bodies, often invading the appendix, or they may be vomited from the stomach; they produced a toxin which no doubt accounted for very many of the reflex symptoms. Any of these conditions may result from the presence of these parasites.

DR. O. M. SCHLOSS, in answer to Dr. Pisek's question, said that there were no more than ten or fifteen of foreign birth among the cases he reported, although about one-quarter of them were of foreign parentage. With regard to the feeding it was well known that one parasite at least, the common tapeworm, was transmitted by the so-called "measley beef." A contaminated water supply might be the means, however, of the spread of other parasites.

He said that he had not examined the domesticated animals for the parasites. The *tænia elliptica* of cats had not been found in any of the children examined. In one case of the dwarf tapeworm he had found a parasite in the rat from one of the houses in which infected patients lived. A number of mice were examined but they did not harbor the dwarf tape worm. The most common means for the transmission of the common intestinal worms was through the ova passed in the feces of infected patients.

CEREBROSPINAL MENINGITIS IN AN INFANT TWO MONTHS OLD.  
DIAGNOSIS MADE BY TAPPING THE LATERAL VENTRICLES.  
TREATMENT BY INTRAVENTRICULAR INJECTIONS OF FLEX-  
NER'S ANTIMENINGITIS SERUM. RECOVERY.

DR. LOUIS FISCHER reported the case of an infant whose condition was considered to be hopeless for three weeks, who made a brilliant recovery without complications after being treated by the intraventricular injection of Flexner's serum. Until three days before her admission to the hospital, she had never been sick. On September 29 she vomited, had anorexia, and gastric discomfort; a laxative relieved her of these symptoms. On October 1, the mother noticed twitchings of the arms, stiffening of the muscles of the neck, rolling of the eyeballs, restlessness, insomnia, and sudden piercing cry as though the child was in pain. On October 2, the child was admitted to the hospital. There was complete rigidity of the body for ten minutes, then a relaxation. The eyeballs rolled upward, the neck, arms, and legs were rigid, and the infant cried. During one of these spasmodic attacks the mouth remained wide open. There were no cardiac or pulmonary symptoms. The following were the chief complaints: Sudden onset with vomiting; loss of appetite in an otherwise normal breast-fed infant; rigidity of the head and neck; rigidity of the extremities and convulsive movements; anterior fontanel was open one-half inch, and was slightly bulging; the posterior fontanel was closed; pupils were equal and reacted sluggishly to accommodation and to light.

On October 2, a lumbar puncture was performed, and 1 c.c. of a turbid blood-tinged fluid withdrawn; the meningococcus was looked for, but not found. On October 7, ten and eighteen lumbar punctures were made, but resulted in dry taps. As they had had three successive dry tapings and symptoms of rigidity, opisthotonos, fever, (and twitchings, on October 20 the lateral ventricles were tapped and about 15 c.c. of turbid fluid containing pus were withdrawn. From the right lateral ventricle the smears showed intracellular Gram-negative meningococci; cultures made from this pus at the Rockefeller Institute corroborated the diagnosis. The ventricles were irrigated with normal saline solution, at a temperature of about 105°. The excess fluid was allowed to drain out through the needle, and 25 c.c. of antimeningitis serum were slowly injected into the ventricles. During the injection of the fluid the child changed in color from a waxy pallor to a uniform red flush all over the body. One-half hour after the injection of the serum the child still remained flushed, perspired freely, and had some frothing at the mouth. Otherwise the general condition was good. The temperature was 101.8, the respirations 80, and the pulse rate was 120. On October 21, the ventricles were again irrigated with normal salt solution and the serum again injected. The fluid withdrawn contained numerous meningococci. On October 22, the condi-

tion of the child was very poor. Opisthotonos was marked; the arms were rigidly extended and the palms everted. The child made no sound. Upon the slightest disturbance the child went into a spasm of muscular contraction involving all the limbs. The pulse increased to 140, but was regular, of good tension, of fair size, and of good volume. On October 23, a dry tap was made in the fourth lumbar interspace; a second needle was then inserted in the third interspace, the first needle remaining *in situ*. Through the second needle 15 c.c. of Flexner's serum were injected, about 3 c.c. of which returned through the first needle. Then 15 c.c. of the serum were injected through the first needle and about 5 c.c. of this returned through the second needle, thus proving that both needles were in the canal and that there was a clear passage from one needle to the other. The child retained in the canal 20 or 25 c.c. of the serum. On October 25 slightly cloudy fluid was withdrawn which appeared as though it had been colored by the serum injected. Up to October 28, the amount of serum injected was about 100 c.c. From this time on to December 6 there appeared to be a gradual improvement. This child was brought to the hospital October 2, and was discharged December 16, in normal condition. There were no evidences of blindness or deafness. The quantity of serum injected should equal but never exceed the quantity drained from the spinal canal. The success in Dr. Fischer's case was due to persistence in the method outlined, by the removal of a sufficient quantity of the purulent fluid within the brain, and then by the injection of the serum.

#### DISCUSSION.

DR. SIMON FLEXNER said that the case presented by Dr. Fischer was the first example of recovery in epidemic cerebrospinal meningitis to come to his knowledge in which there was an impassible obstruction at the foramen of Majendie and in which a purulent exudate was proven to be present in the ventricles. The recovery in this instance was attributed to the use of the antimeningococcus serum, and he thought it was fair to attribute the recovery to it. They were all glad to accept the case as proof that recovery did follow the administration of the serum, yet it was not impossible that the washing out of the ventricles may have contributed to the favorable results; there had been several instances recorded in which the ventricles had been tapped and serum injected; but Dr. Fischer's case was the first case that terminated in complete recovery. Dr. Cushing had a case that died; Dr. Knox of Baltimore had a case that also died, and Dr. Netter of Paris reported another case and this patient died. A very striking thing was that such a considerable operation could be carried out in these young children, and without any danger so far as he knew from the half-dozen cases recorded there had been no ill results from the intraventricular injections. It was very hopeful, therefore, to see such a splendid recovery

and to think that possibly some of the cases of obstruction which formerly terminated fatally might now be saved. One could speculate on how the communication between the ventricles and the subdural space was re-established; and conclude that the foramen of Majendie became again patent. It was also possible that the foramen of Luschka contributed to the re-establishment of communication, but for the present this was merely speculative. Perhaps at some time an opportunity would be presented to make observations that would clear the point up.

DR. GODFREY R. PISEK was very much interested in the report of the case presented by Dr. Fischer and, if the opportunity appeared, he certainly would use the method described. Dry tapplings, as a rule, were infrequent, and he could recollect in a considerable number of lumbar punctures of only seeing two dry tapplings, but he had to go high in the canal before he got fluid. Occasionally, if one tapped in the same place, he would get a so-called dry tapping. In the case presented there was undoubtedly an occlusion of the foramen of Majendie.

DR. ALFRED N. STROUSE said that what rendered Dr. Fischer's case of special interest to him was the presence of an amaurosis which was unassociated with any perceptible changes in the media and fundus. Careful and repeated examinations failed to disclose the slightest evidence of the edema or swelling of the nerve, or retinal congestion. In fact the examination was entirely negative. Such cases were evidently somewhat rare, for little mention was made of them in the literature, although it has only been in recent years that routine examinations with the ophthalmoscope have been practised in cerebrospinal meningitis. In the cases that had recently come under his observation the amaurosis could always be explained by the pathological findings in the fundus. In order not to take up the time of the Section he refrained from a detailed description of the more common ocular manifestations of this disease and limited his remarks to the particular case under discussion.

How can the undoubted blindness in both eyes, in the absence of lesions in the fundus, be explained? If it had been due to a direct extension of the inflammation along the sheath of the optic nerve or to an exudate at the base of the brain involving the optic tract resulting in a neuritis, the ophthalmoscope would have revealed some evidences of their existence. Any involvement of the choroid by the infective process would have been equally apparent. Detachment of the retina, hemorrhage, or external conditions that might have obscured vision could have been readily excluded.

We are, therefore, inclined to account for the amaurosis on the theory of a toxemia. It is quite conceivable that toxins produced by the meningococcus might cause a temporary paralysis of the visual functions, and that as these toxins are gradually eliminated a complete restoration occurs, as in this case. Somewhat analogous conditions obtain in other forms of

amblyopia and amaurosis, in which ocular changes may be slight or even absent.

DR. SAMUEL J. KOPETSKY said that the question of intraventricular puncture interested him very much, and in otitic meningitis he had performed intraventricular puncture with a resulting cure. But his mode of procedure was not as Dr. Fischer's or Kocher's, for he perforated the ventricle through the tegmen cellulæ of the mastoid process. When the ventricle was distended with fluid it was easily reached and could hardly be missed. He used the ordinary Quincke needle that was employed in lumbar puncture, pushing it through in a slanting direction for from 4 to 6 cm. He presented at the Otological Section, two years ago, a patient who had recovered, in whom various and repeated examinations had not shown the meningococcus, except at one of the examinations. The examinations had revealed different microorganisms than the meningococcus, and the case was not considered to be one of cerebrospinal meningitis, but to be a purulent meningitis following mastoid involvement. Tapping the ventricle through the fontanel could be done in an infant, as in the case before the section; but in older patients with meningitis from whatever source, the ventricle could be tapped through either of the other routes indicated and the required amount of fluid withdrawn; and quicker results would be obtained than if an attempt was made to obtain the fluid through the spinal column. The advantage of the ventricular puncture in the case which gave "dry" taps from the spinal canal was so obvious as hardly to need comment.

DR. FISCHER, closing the discussion, said that the case he presented was not the first one in which he had employed intraventricular injections. Another case, an infant seven weeks old, was admitted to the hospital with symptoms of cerebrospinal meningitis. After a series of lumbar punctures resulting in dry taps, the ventricles were punctured, and pus containing the meningococcus was found. The ventricles were then irrigated with normal saline solution, and Flexner's antimeningitis serum was injected. The patient lived thirty-six days and seemed to show renewed strength after each serum injected. Dr. Fischer reported this case before the International Medical Congress last summer. These two patients were very young, one two months old, the other seven weeks old; hence it was possible, because of the open fontanel, to utilize the same for diagnosis as well as for treatment.

The bulging fontanel suggested intracranial pressure, probably due to the ventricles being filled with pus. When this pus was aspirated and the diagnosis confirmed, the serum treatment was commenced. Heretofore all infants under one year had died, and because of this fact Dr. Fischer selected the youngest class of cases, believing that they could enter the ventricles from above and inject the serum, in addition to the intraspinal route heretofore used for tapping and injection.

With regard to the closure of the foramen of Majendie, Dr. Fischer thought it best to leave the child alone for some time in order that it might become stronger; yet he wished to make a lumbar puncture in order to satisfy himself that the communication between the spinal canal and the subarachnoid space was open through this foramen.

In regard to Dr. Pisek's remarks about dryappings, he said that he had performed hundreds of lumbar punctures, but he had not used the same spaces between the vertebræ each time; it should be borne in mind that adhesions would form after such punctures. He said he had been exceedingly careful in the selection of his cases, and he would not attempt to do a lumbar puncture in private practice except with proper and qualified assistants. Although he usually punctured the third interspace, he did not believe that one should go above the fifth interspace because of the danger of injury to the cord.

When dry taps were noted, after entering several interspaces at different times, and if meningeal symptoms plus the bulging fontanel continued, then and then only was one justified in tapping the ventricles; if in an infant, through the open fontanel; if, on the other hand, the fontanel was closed, then the Kocher method of entering the skull should be chosen.

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## REVIEW.

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DISEASES OF CHILDREN. By HENRY DWIGHT CHAPIN, A. M., M. D., and GODFREY ROGER PISEK, M. D. With 179 illustrations and eleven colored plates. New York, William Wood & Co., 1909. \$4.50 net.

The volume opens propitiously with concise directions of a practical nature for the care of premature babies. The chapters upon the examination of the child, therapeutics, and diagnosis are well written and contain clear explanations and instructions for the measures to be employed. This is as might be expected, since they come from the pens of two well-known clinical teachers. The weight and development of the child is also given careful consideration. Here, however, although approving in the main, it seems necessary to comment on the statement of the authors that the average weight of an infant at one year is but eighteen and nine-tenths pounds. The conclusion seems inevitable that these figures are drawn mainly from institution or sick or bottle-fed children rather than from normal children in their homes. Certainly a physician would have little reason to be satisfied with his results if a normal child under reasonably favorable circumstances attains only to this weight, since the average of children whose nutrition is supervised with any care is rather above than below the twenty to twenty-one pounds at one year which has of late years been the standard in this country. Very naturally

the portion of any new book concerning children which is most closely scanned by both reviewer and purchaser is that which deals with infant-feeding. In this instance there could be, it would seem, but one opinion, the whole question of nutrition is admirably handled. The fundamental principles upon which proper feeding must be based are presented in a new way. There is a commendable and, we think, successful effort to explain more fully to the student the indications upon which he is to base his changes in the food modifications. The practitioner who has heretofore fed infants by rote or formula should, after careful mastery of these pages, begin to appreciate the reasons for his success or failure. While this section on feeding would of itself repay the purchaser, the subsequent portions dealing with the diseases of childhood are of a high order. Clearness and conciseness are secured occasionally at the sacrifice of qualifying comment, but as a text-book and working manual its presentation of the science and practice of pediatrics, together with the more recent clinical tests and the use of serum therapy, is definitely up to date. Altogether, within the limits which the authors set for themselves in their preface, it is the best book on the subject of the year.

T. S. S.

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## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Position of the Apex-beat in Children.**—In examining 500 children, J. E. H. Sawyer (*Brit. Jour. Child. Dis.*, Dec., 1909) found that the apex-beat is normally situated without the mammary line up to the third year, in the mammary line from the third to tenth year, and that after this age it gradually assumes the position found in the adult. Even at the age of fifteen years the apex-beat is found in the mammary line in almost a third of the cases, but this large percentage is probably due to the bad development of the chest in many of the children. That the apex-beat of children is situated further out than in adults is generally recognized, but it is not usually accepted that this outward position remains during such a long period of the child's life.

**Value of the Undescended Testis.**—J. Bland-Sutton (*Practitioner*, 1910, lxxxiv, 19) claims that the imperfections of an undescended testis are the cause, not the consequence, of its failure to reach its goal in the scrotum. He states that an undescended testis is more liable to malignant disease than one which is normally lodged in the scrotum. Viewed in this light, surgical efforts to preserve a retained, or a partially descended testis, may be described as supererogation.

**Bier Treatment of Tuberculous Joint Disease.**—L. W. Ely (*Surg. Gyn. Obst.*, Jan., 1910) holds that the Bier treatment of joint tuberculosis finds its greatest use in the upper extremity and in the ankle and tarsus. It is of less service in knee-joint disease, and cannot be applied in disease of the hip or of the spine. His own experience with the treatment, while more or less limited and acquired almost entirely during the past year, has been favorable and warrants a continuance of the experiment.

**Treatment of Tuberculous Sinuses with Bismuth Paste.**—L. W. Ely (*Amer. Jour. Surg.*, Jan., 1910) records the results obtained in fourteen cases treated by this method. The most significant of these were, that the infected sinuses from a case of Pott's disease healed up while the bismuth injections were being used, though heretofore an infected sinus from Pott's disease was considered the patient's death warrant; and that a rather long sinus in a case of hip-joint disease, with necrosis of the tissues at its mouth, was for months kept from secondary infection. An elbow with a sequestrum was not benefited at all. In the presence of visceral involvement the injections are of little value. The bismuth is of more use in old infected sinuses than in recent ones. In cases of tuberculosis of the calcaneus the injections were not of much value.

**Proprietary and Predigested Foods.**—John Howland (*Jour. Amer. Med. Ann.*, 1910, liv, 196) thinks that predigested medicinal foods have no reason for existence, that proprietary infants' foods are unnecessary, and that in pediatrics we can almost entirely dispense with ferments. All are very deficient in fat, low in proteins and salts, and they contain large amounts of insoluble and soluble carbohydrates, starch, dextrins, maltose, lactose, and saccharose. There are two chief arguments against their permanent employment: used without milk they fail absolutely; used with milk they are unnecessary. Their composition shows plainly why they are impossible without milk; they are hopelessly deficient in fat, and many are so low in proteins as probably to furnish less than the minimum of nitrogen required. The mineral content also is unduly low. Rickets is to be expected with them. Absolutely lacking in that very essential but vague quality of freshness, their use is followed in a considerable proportion of cases by scurvy. As permanent foods with milk they are unnecessary. There can be no doubt that many of them can be used with benefit with cow's milk, but just as satisfactory results can be obtained without them. There is no evidence whatever that they increase in any way the digestibility of cow's milk, and there is no reason why they should. The ingredients that they furnish can be furnished just as satisfactorily by much simpler and more economical means. They do not contain what they claim to contain, and their composition varies greatly from time to time, as shown by chemical analysis.

**Relation of Acute Polioencephalitis to Infantile Paralysis.**—

A. Delearde and André Paquet (*L'Echo. méd. du Nord*, Dec. 19, 1909) believe that acute polioencephalitis is the same process and disease as infantile paralysis, but differently located. The gray cells of the bulbar nuclei are affected. It is termed superior when the nuclei of the motors of the eye are affected, and inferior when the nuclei of the facial, glossopharyngeal, pneumogastric, spinal, and hypoglossal nerves are involved. The similar etiology, symptomatology, evolution, persistence of muscular atrophy, arrest of development of the osseous muscular system, and the lesions in the cadaver identify these diseases as the same. The exact etiology is unknown, but it resembles the other infectious diseases. There are three phases; invasion, paralysis, and remission, with localization of atrophy, and deformities. The invasion is like that of other infectious diseases; the paralysis all develops at once; it is flaccid, with reaction of degeneration in the muscles, abolition of faradic contractility, and reversal of the galvanic formula. If faradic contractility is entirely lost paralysis is permanent. Muscular atrophy is a sequela. If the eyes are affected there may be fixity of the globe, ptosis, or strabismus. There is disturbances of speech and deglutition when the nerves of the tongue and plate are affected; loss of voice when the recurrent laryngeal nerve is involved; and stoppage of respiration and frequent pulse when the pneumogastric is involved. Sensory troubles are absent; the sphincters are normal. Lumbar puncture is of great value in establishing the diagnosis; from cerebrospinal meningitis in which we have polynucleosis, and presence of microbes of cerebrospinal meningitis. Pathological anatomy shows that there is an inflammation of the nerve centers of the bulbar region, especially the motor nuclei. The prognosis is very grave when the pneumogastric is affected, and death may occur suddenly. Treatment is very unsatisfactory.

**Epidemic Poliomyelitis in Monkeys.**—Continuing their investigations (see abstract, *AMER. JOUR. OBST.*, 1910, lxi, 567), Simon Flexner and P. A. Lewis (*Jour. Amer. Med. Assn.*, 1910, liv, 535) have studied the mucous membrane of the nasopharynx with reference to the virus of poliomyelitis. The entire mucosa of these parts, in monkeys recently paralyzed, has been excised, rubbed up with quartz sand, pressed through a bacteria-tight Berkefeld filter, and injected in the usual manner into the brain of monkeys. By employing this method, the writers have been able to produce paralysis and thus to prove that the mucous membrane contains the virus of poliomyelitis. They have also found that when the virus is injected into the spinal canal by lumbar puncture it sets up the disease and causes the characteristic paralysis. The cerebrospinal fluid removed from monkeys at the onset of paralysis is altered: it contains an excess of proteid and lymphocytes, and coagulates spontaneously. Paralysis also follows the inoculation of this fluid into the brain. The experimental results show that a path of elimination of

the virus of poliomyelitis is by way of the nasopharyngeal mucosa and indicate that the same path may be traversed in the course of infection. Hence it would seem desirable, at the present stage of our knowledge, to deal prophylactically with epidemic poliomyelitis, as with epidemic cerebrospinal meningitis by disinfecting and destroying the secretions of the nasal and buccal cavities.

**Role of Cerebral Lesions in Infancy and Childhood in the Causation of Epilepsy.**—M. L. Perry (*Med. Rec.*, Feb. 12, 1910) says that cerebral lesions in infancy and childhood have a much more important influence in the development of epilepsy than is usually attributed to the condition, and that the importance of such cerebral lesions as a causal factor is second only to bad heredity. He calls attention to the frequency of unilateral attacks in epileptics and to the fact that quite a number of them have suffered at some time during infancy or childhood from attacks of convulsions characterized by an unusual amount of constitutional depression, and involving one side more than the other. It is maintained by some good authorities that most, if not all, cases of epilepsy dating from an attack of some acute infectious disease, as measles or scarlet fever, have as their pathological basis a cerebral lesion. Infantile convulsions appear clinically to be the cause of brain lesions, probably hemorrhage, and these in turn to give rise to the epileptic seizures. This emphasizes the importance of preventing or arresting convulsions in children.

**Clinical Study of the Nervous Troubles Connected with Pott's Disease.**—X. Delore and A. Chaliier (*Lyon méd.*, Jan. 9, 1910) state that although motor difficulties may appear early in Pott's disease, they are generally late in their occurrence. Pain, contractures, and deformity usually precede them. Exaggeration of the reflexes and epileptoid tremblings occur frequently and very early, as a result of irritation. Epileptoid trembling is always a pathological sign, and is easier to elicit in young children than increased knee-jerk. These signs are the precursors of paralytic symptoms. Simple monoplegia, total paralysis of all the limbs, or unilateral paralysis may be seen in these children, according to the site of pressure on the spinal cord. It may occur abruptly with sudden appearance of gibbosity due to atloaxoid luxation, or may be apoplectiform in its approach. In other cases it comes on slowly, beginning with easy fatigue, stumbling, and trembling of the knees. The paralysis is frequently but not always spasmodic. There may be a complete interruption of the paths in the spinal cord, motor and sensory, leaving a flaccid paralysis. If there is an incomplete interruption we have a spastic paralysis, without loss of sensation and with increased reflexes. We must distinguish four types of paralysis: spastic paraplegia with exaggerated reflexes, but without troubles of sensation; flaccid paraplegia with abolition of reflexes, but no sensory troubles; flaccid

paralysis with abolition of reflexes and dissociation of sensation (syringomyelia); and flaccid paralysis with abolition of reflexes and complete anesthesia. The most frequent is spasmodic paraplegia with exaggerated reflexes and sensory disturbance. All degrees of paralysis may be seen from slight weakness to complete paralysis.

When contracture is severe walking becomes impossible. Trophic and sphincter troubles may be added and the patient may succumb to secondary septicemia. These cases may not be so grave, and many of them recover spontaneously. Curable paraplegias may be recognized by these characteristics; slow development of spasm; incomplete loss of sensation; no loss of flesh; normal muscular irritability and reflex excitability; absence of relaxation of the sphincters, sloughs, and congestion abscesses.

**Treatment of Complicated Hare-lip and Cleft-palate.**—J. B. Roberts (*N. Y. Med. Jour.*, 1910, xci, 1) says that a child born with harelip and cleft-palate should be treated by what might be called the composite method: Immediately after birth the mother should press the two halves of the upper jaw together firmly with her fingers two or three dozen times a day, to lessen the width of the fissure. As soon after birth as possible, the soft and semicartilaginous bones of the upper jaw should be forced together by means of a Hammond clamp or by the operation of Brophy, with wire tie beams and lead plates. About the same time that this replacement of the bones is attempted, the alveolus should be reconstructed in front, if there be any great deviation in the alignment. Any protrusion of the intermaxillary bone must next be corrected by a plastic or osteoplastic operation at the front part of the septum of the nose. Any gap remaining in the roof of the mouth must next be closed by a flap operation. A fissure in the upper lip must be closed by carefully applied sutures and the deformity of the nostril must be corrected. If the lower lip is conspicuously prominent a V-shaped piece must be excised and perhaps the upper lip widened by insertion of tissue from cheek, chin, or hand. After the flap operation for closing the palate cleft, great care must be taken to keep the parts clean by flushing out the nose and spraying the palate with weak Dobell's or normal saline solution. The patient may be kept quiet by small doses of chloral and paregoric. The writer feeds by the mouth with liquid food and endeavors to keep the suture wounds moderately clean by spraying or swabbing. Patients should be operated upon early enough to have a fair reconstruction of the parts before the child begins to talk.

**Serum Diagnosis of Bacillary Dysentery in Infants.**—W. P. Lucas, J. G. Fitzgerald, and E. H. Schover (*Jour. Amer. Med. Assn.*, 1910, liv, 441) believe that in the conglutination reaction we have a means of serum diagnosis in infections by the dysentery bacillus which is far superior to any other as yet devised. Of forty-five cases of infantile dysentery ("infectious diarrhea")

dysentery bacilli were isolated in thirty-eight cases (84.4 per cent.). In thirty-five of these bacteriologically positive cases mannit-fermenting strains only were isolated. The mannit-nonfermenting variety (Shiga) was isolated in three cases, in one of which it was found in conjunction with fermenting strains. Dysentery bacilli (acid mannit) were found in one of fifteen control cases. Evidence of reaction on the part of each patient to either mannit-fermenting or mannit-nonfermenting types of dysentery bacilli was sought in the blood serum. In every case, so far as practicable, three methods of serum diagnosis were employed, the reactions of agglutination and of fixation, and the reaction of conglutination (Bordet and Gay, Streng). The serum in many cases was tested at intervals in order to determine the time of occurrence in the disease of a positive reaction by each method. Reactions with the Flexner strain were much more frequent than those with the Shiga strain; this is owing not only to a direct relation to the organisms producing the infections under consideration, but also, in all probability, to a greater agglutinability of the Flexner organism. In the doses employed, fixation reactions were obtained with the Flexner, but not with the Shiga strain in over a quarter of the control cases (28.5 per cent.). It was found with both Flexner and Shiga much more frequently (50 to 60 per cent.) in the positive cases subsequent to the first week. A positive agglutination reaction was obtained in one control case to Flexner; it occurred in 55.5 per cent. of the positive cases with Flexner ranging from 9 per cent. during the first four days to 75 per cent. at the third week (thirteen to sixteen days). In about half as many cases a reaction was obtained with Shiga. No positive conglutination reaction was obtained in control cases. The reaction was present more frequently than either agglutination or fixation during the disease (63.1 per cent. to Flexner). In addition, conglutination was obtained with this organism in 50 per cent. of the cases during the first four days of the disease. Reactions with the Shiga type as given by conglutination were absolutely and relatively fewer than by the other methods. This would seem to indicate a more absolute specificity for this reaction.

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## DISEASES OF WOMEN AND CHILDREN.

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### ORIGINAL COMMUNICATIONS.

AMERICAN GYNECOLOGY.\*

BY

EDWARD P. DAVIS, M. D.,

Philadelphia, Pa.

AMERICAN gynecology had its origin in the crude obstetric practice of fifty years ago. The necessity for repairing the injuries of labor developed the genius of Sims and Emmett, and American ingenuity added a new branch to surgical science. As obstetric surgery has developed and asepsis was introduced, gynecology has become more and more abdominal surgery. This has been the case not only because better obstetrics has lessened the injuries of labor, but because women have those abdominal lesions most easily recognized and most frequently occurring.

At present the modern gynecologist operates upon men and women alike, the surgeon in turn performing many operations on women.

To-day the tendency of development in gynecology lies in the study of the normal relations of the abdominal and pelvic viscera, the determination of the dynamics of the abdomen and pelvis, and the recognition of those causes which produce abdominal and pelvic ptosis. We have learned that the repair of lacerations to the genital tract does not suffice to cure these cases.

The pelvic viscera must be brought into such relation with the abdomen and its contents that the dynamics of the abdomen shall maintain health for the individual and not disease. That

\*The President's Address to the American Gynecological Society, at Washington, D. C., May 4, 1910.

this subject is to-day of primary importance is shown in the fact that this Society and the American Surgical Association are about to engage in a joint discussion of this problem.

Modern surgery, having conquered the world of technic, seeks other fields of conquest. The operation for cancer, that eternal scourge of humanity, seems to have reached its anatomical limitations, but the cause of cancer remains unknown. Gynecology to-day is especially charged with the task of studying the cause and the mode of growth of malignant disease, so that operation may be wisely chosen and performed. The genital tract of woman gives opportunity to study pathological processes closely akin to malignant disease. Such are the nonmalignant degenerations of the generative organs, of which examples are found in autolysis of the uterus, changes in the Graafian follicles and corpus luteum, necrobiosis in fibroids, and cystic and calcareous changes in ovarian and fibroid tumors. Protoplasm may thus be studied in its germinal and degenerative changes. The discovery of chorioepithelioma and its identification as a fetal form of malignant disease serve to illustrate this point. Our knowledge of cancer to-day pauses at the phenomena of premature cellular death and degeneration.

Is it too much to hope that gynecology, by virtue of its peculiar opportunities and experiences, will first solve this problem.

The failure of bacteriology to adequately explain many phenomena of malignant disease calls our attention to pathological chemistry. A new cellular pathology is yet to be written from the standpoint of cellular metabolism. In this not only must pathological chemistry bear its part, but the transplantation of diseased tissue and viscera in animals may be of value.

In no branch of modern medicine has so great advance recently been made as in obstetrics. Pathological chemistry has thrown new light upon toxemia and eclampsia and lessened the frequency and mortality of these grave complications of parturition.

The development of obstetric surgery has divided those who practise obstetrics into licensed midwives, including general practitioners of medicine, and obstetricians; the former competent to attend normal labors, the latter skilled in the management of the complications of pregnancy and labor.

The multiplication of hospitals makes it usually possible to transfer operative cases. Should this resource fail the obstetrician will transport the essentials of surgical technic to the

patient's dwelling. The field of obstetric surgery, embracing the complications of pregnancy, labor, the complete repair of injuries, puerperal infection, the cure of conditions resulting from and developing after labor, and injuries to the newborn, is so large that especial skill and experience only can attempt to do it justice. The double responsibility of maternal and fetal life demands for this work special study and training.

In no other department of medical science has competent specialization so lessened mortality and morbidity.

The mortality and morbidity from puerperal septic infection outside of hospitals has been but little reduced by asepsis and antisepsis, not because these methods are inefficient, but because untrained midwives and incompetent general practitioners undertake the management of complicated parturition. Nor will this condition be improved until complicated delivery receives that surgical attention which has so lessened death and disease from other causes among women.

Obstetrics offers abundant work for the future. Toxemia and eclampsia are but partly understood. It is still not proven that vaginal delivery after opening the pelvic girdle is not accompanied by such injuries that abdominal delivery is not better; and even in the repair of lacerations, the final word has not yet been spoken. It is still an open question whether in puerperal sepsis we can do more than feed and stimulate the patient. The effort to give the pregnant woman hospital care before labor, and the study of what constitutes a rational puerperal period, promise well and deserve attention.

If these things may be said of our work, what shall we say of the workers? This Society is to be congratulated that during the year past no death has occurred among our American Fellows. But we cannot forget the striking loss of our German colleagues, when within a few weeks Pfannenstiel, Runge, and von Rosthorn, were taken from them. Pfannenstiel, our honorary member, won our hearts during his visit in 1908. His life promised much for science and for his colleagues. His loss is indeed a deprivation.

This is the American Gynecological Society. While science is our first love, we cannot forget our duty to our country. It is a frequent boast that this nation, because of its situation, resources, and numbers, is invincible.

There is no nation which cannot fall a victim to its own decay. The rapid gain in wealth, the amazing greed for luxury, the

decrease of a sane and natural life, the lessened moral reflex of the nation and increasing degeneracy, suggest a Roman parallel for this Republic.

To us is entrusted the physical care of woman in her most important function, the conservation of the American people.

Our supreme reliance in national crises is the moral sense of the people. But how can this obtain unless children be born with sound brain in a healthy body, and trained from earliest days to a natural life and prompt obedience. If this republic is to endure, its women must bring to its altars not the paste jewels of an artificial luxury, but those gems which made immortal the mother of the Gracchi. Gynecology is an American science, of which America may well be proud. Let us see to it that it serves faithfully the land of its birth.

250 SOUTH TWENTY-FIRST STREET.

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## POSTOPERATIVE CYSTITIS.\*

BY

JOSEPH TABER JOHNSON,

Washington, D. C.

By postoperative or postpartem cystitis I mean an inflammation of the bladder which did not exist before the operation or before the delivery and which followed the operation or childbirth so closely as to make one reasonably certain that they bear toward each other indirectly the relation of cause and effect.

While there may be a number of contributory and predisposing causes of cystitis, I desire to draw attention in this brief paper to the too frequent bacterial infection of the bladder by the bungling and painful use of the catheter by not sufficiently trained nurses and hospital internes.

All recent writers on this subject with whom I am familiar unite in ascribing the chief cause of this inflammation to "bacterial infection," the germs being carried up, says Gilliam, by a dirty instrument or gathered up by a clean instrument in the act of passing a catheter. Cystitis arising from this cause is much less frequent now than formerly, owing to the wide spread of knowledge of the rôle played by bacteria in the inflammatory process.

"Despite all this, it is a fact, and a lamentable one, that many if not almost all cases of cystitis in women are clearly traceable to faulty methods of catheterization."

\* Read before the American Gynecological Society, May 3, 4, 5, 1910.

My chief object now is to draw your attention again to this fact and to elicit a discussion which may emphasize the necessity for a more strict prophylaxis and, when cystitis is diagnosed, a more active and continuous treatment not only to bring about an early cure, but to prevent the transition from an acute to a chronic condition.

Cystitis seems to occur in women more frequently after abdominal than after other operations where there are associated the evil influences of both traumatism and bacterial infection. Block found it to follow about 10 per cent. of the cases he observed. The traumatism consisted chiefly in the injuries inflicted on the bladder during the performance of radical cancer operations or in supravaginal and panhysterectomies where the bladder had been peeled off from the anterior surface of the uterus; I have found the bladder to resent the pressure of gauze packing inserted into the abdomen to arrest hemorrhage or to aid drainage from above or through an artificial opening into the vagina. The overdilatation of the bladder by retained normal urine caused by the use of opium or other reasons will lessen its resistance against infection from a less number or less virulent germs than as if no such trauma existed.

Taussig mentions cases where cystitis followed catheterization notwithstanding the most antiseptic precautions relating to the hands, the instruments, the introitus vagina, the lubricant, etc., and came finally to the conclusion that the infecting germs were picked up by the catheter in its passage through the urethra and carried into the bladder. This he proved by finding the same germs in the catheter-drawn urine, which he subsequently found by a bacteriological examination in the secretions withdrawn from the urethra. This same statement is confirmed by Savor, Rovsing, Raymond, and others. While most observers have found the staphylococcus to be the most frequently offending germ in the causation of postoperative cystitis, the streptococcus is not infrequently present, especially in puerperal cases, and Raymond reports seven cases where the colon bacillus was the cause of the cystitis.

It is probably true that many germs may be introduced into the healthy bladder and that they may cause no infection or inflammation in the entire absence of trauma.

My chief contention, however, is "that the ignorant or careless use of the catheter by so-called trained nurses, overworked hospital internes, or even by the operator himself" supply both

the trauma and infection by their haste and neglect of the gentle and aseptic use of this little instrument.

Many times have patients complained to me of the pain they have suffered in the performance of this minor and so-called insignificant operation, when I had promised that the withdrawal of their urine would be a painless attention.

Where patients are catheterized several times daily for a week or even longer, the conditions are present which easily result in the production of a cystitis unless unusual care is practised to prevent trauma or infection.

The atrocious pain and nervous trepidation caused by the very frequent and imperative desire to pass urine suffered by patients with an acute postoperative cystitis presents a picture not soon forgotten by them or their friends, the nurses, or the attending staff. There is very little consolation to be derived from the thought that this acquired condition might have been avoided by the exercise of a little more skill, gentleness, and care.

There is a growing tendency among recent writers to class postoperative cystitis among the preventable diseases and to speak in severe terms of the "culpable neglect" of those who have introduced bacterial infection into the bladder by the unskillful or unclean use of catheters. Some of us have come to regard the routine use of the catheter after our operations with more dread than we do the routine use of opium. The irritating effects of the use of one and the acquired and habitual use of the other have sometimes created conditions which have outweighed the importance in the minds of the patients and their friends of the disease for which they originally sought relief.

The main point in the management of these distressing cases is their prevention. Perhaps enough has been said of prophylaxis when speaking of the etiology to intimate the steps necessary to prevent trauma and the introduction of infection not only the first time the catheter is used, but every time it is used.

Investigation shows that germs are found to be more numerous and virulent in the genital tract and urethra of patients confined to bed than in our ambulatory cases, showing that greater care is necessary to prevent infection of the bladder by the continuance rather than in the early uses of the catheter.

Rosenstein has suggested a double catheter or a catheter within a catheter to avoid carrying infection germs into the bladder; but Taussig and others think this rather bulky instrument would do more harm than good by the painful stretching

of the urethra, and suggest that after the careful disinfecting of the instrument and outside parts that the urethra might be gently irrigated with a solution of boric acid and the glass catheter followed by the immediate use of tablets of urotropin by the mouth which would have for their object the liberation of sufficient formaldehyde in the bladder to kill the few germs introduced even after the carrying out of the strict antiseptic precautions above mentioned.

We are deprived of the advantage, in these cases requiring the use of the catheter, of the cleansing effect of the urine upon the urethral mucous membrane, which is so valuable in preventing an ascending infection in cases of urethral gonorrhea.

It is unnecessary to dwell upon the details of the treatment of actual cases of cystitis, which are as familiar as their A B C's to every Fellow of the society.

The writer's object being to direct attention to the still too frequent occurrence of this painful and embarrassing and unnecessary complication of our otherwise successful gynecological and abdominal operations, and to briefly discuss the etiology and prophylaxis of this almost universally preventable condition.

926 FARRAGUT SQUARE.

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## THE TREATMENT OF ECLAMPSIA BY CONTINUOUS SUGAR-WATER INSTILLATION\*

BY

SIDNEY D. JACOBSON, M. D., M. R. C. S. (ENG.), L. R. C. P. (LOND.),  
New York.

THE term Eclampsia is derived from a Greek word meaning to shine or suddenly appear. It is characterized by convulsive seizures in which the patient becomes unconscious. It varies in intensity from a very mild attack, in which there is only some fibrillary twitching of the facial muscles, to one in which marked opisthotonos, apnea, and deep cyanosis, with widely dilated pupils and bloody froth upon the lips, bear witness that the end is near. To the unobservant the attack appears to have come on suddenly and without warning. Hence the name eclampsia. The true physician, however, will rarely be surprised in this manner. He will notice a slight edema of the eyelids, a puffiness of the ankles, will know the significance of the complaint of headache or dizziness, a tendency to vomiting in the latter half of gestation, and above all will examine the patient's urine and

\*Read before the New York Academy of Medicine, Section on Obstetrics and Gynecology, May 26, 1910.

find the almost never failing signs of a nephritis—albumin and perhaps casts.

I say almost never failing signs of nephritis in the urine, because some authors (probably having copied from others) claim that it is possible for eclampsia to appear without changes in the urine. Personally, I have never seen such a case and have always doubted its occurrence.

*The Clinical Picture.*—The woman, usually young, very likely a primipara in the second half of her pregnancy, is in convulsion.

It is only with difficulty that the nurse can restrain her in bed. Any set of muscles or apparently all muscles may be the subject of tonic and clonic convulsions. She may be grinding her teeth and biting her tongue, throwing her arms and legs about, stiffening her back and neck, or the muscles of respiration may remain in a state of tonic spasm, preventing the act of breathing, until deep cyanosis supervenes, the muscles relax, and with a deep sigh she begins to breathe again.

The convulsion may last a minute or longer and it leaves the patient greatly exhausted. Upon inspection she will probably show a slight anasarca, her face will be bloated, her pupils contracted to a pin-point, and a frothy mucus, perhaps tinged with blood, exudes from her mouth. The tongue and lips are swollen and perhaps badly bitten. Her sensorium is clouded: she replies slowly to questions if they are shouted in her ear. The pulse is accelerated, likewise the respiration. The temperature may be raised. The most noticeable and important thing about the pulse is its high tension. It feels like a cord under the examining finger.

There may or may not be something out of the ordinary with the uterus or the pregnancy. The patient may be approaching labor, be in labor, or be delivered. Eclampsia may come on several days after delivery of the child.

The convulsions recur after some minutes or hours, the impairment of the senses deepens into coma, the loud snoring gives place to tracheal “rattles” or râles, and hypostatic congestion or edema of the lungs ushers in the end. In some cases the temperature rises considerably before death, 107° F. being not unknown.

*The diagnosis* is not difficult.

*The prognosis* will be good if all the symptoms gradually ameliorate, if the convulsions cease, if the clouded sensorium

clears so that the patient will answer readily when spoken to, if the quantity of urine increases and the respiration becomes regular and the pulse slow and soft. Memory is usually a blank as to what occurred after the first convulsion.

The prognosis will be doubtful or grave if convulsions follow each other in rapid succession, if the temperature is high, if the very rapid and hard pulse becomes irregular and weak, if coma is deep, if very little or no urine is secreted, if perspiration is difficult to induce, and respiration shallow and signs of pulmonary edema are present. Prognosis should be guarded in nearly all cases, because experience proves that even after one or two convulsions deep coma may set in, followed by death. The amount of urine secreted will be a most important factor in determining the prognosis. If the quantity of urine is very small—only a few cubic centimeters—highly concentrated, boiling solid in the test-tube, and containing large numbers of granular and epithelial casts, fatty kidney epithelia, detritus, and blood-cells, the outlook may be considered gloomy.

At autopsy the only constant changes found are degenerative processes in the liver and kidney parenchyma, shown as cloudy swelling, fatty degeneration, and necrosis of the secreting glandular epithelium. The severity or degree of pathological change found at autopsy varies considerably in different cases. In some it may be noticed by the naked eye and in others only careful microscopical investigation will reveal it. It is remarkable that similar degenerative changes have been found in the kidneys and liver of the children of eclamptics. Other changes found are less constant, namely, embolic infarction caused by liver cells, or by cellular elements of the placenta, fat embolism, and hemorrhages into serous membranes. Lubarsch and Schmorl have given this subject much study and attention. They maintain that the characteristic signs at autopsy in cases dead of eclampsia are: anemic and hemorrhagic liver necrosis, degenerative processes in the kidneys, hemorrhages into, and softening of, the brain, and formation of multiple thrombi.

Its *etiology* is not yet satisfactorily determined. The following theories have the greatest number of adherents: Frerichs states that it is caused by decomposition of urea in the blood, liberating ammonium carbonate. The latter if injected into the blood of animals is known to cause convulsions. As against this view it may be said that investigation has shown that the blood of eclamptics does not contain an excessive amount of ammonium

carbonate. Lately the ammonia coefficient has been determined by investigators, but nothing of definite value has accrued therefrom. Traube believes that brain anemia due to edema causes the convulsions because the edema compresses the brain vessels. This theory has been abandoned. Spiegelberg believed that a reflex contraction of the kidney vessels, which lowered secretion from the kidneys or suppressed it entirely, was the cause of eclampsia. Thus the poisons which were to be eliminated by the urine were retained in the blood and poisoned the system.

Bouchard claims that eclampsia is a form of uremia due to autointoxication and that poisonous matter which should be excreted in the urine is retained in the circulation. He went a step further and sought to prove his theory by means of animal experimentation. He injected the urine of human beings intravenously into animals. It developed that the urine of pregnant women thus injected was less poisonous than the urine of the nonpregnant. From this he argued that pregnant women show a tendency to retention of poisons in their system. Furthermore, the urine of eclamptics was even less poisonous than that of pregnant healthy women. The observations of Bouchard and his disciples Riviere, Laulanie and Chamberlent revealed the important fact that the blood-serum of eclamptics is very much more toxic than the blood-serum of normal women. Ludwig and Savor repeated these experiments and confirmed the results. They also found that the urine of eclamptics after the disease had abated was more toxic than the urine of normal individuals.

Finally came Schumacher, a pupil of Fehling, with proofs that all the previous findings were wrong and showed conclusively that the toxicity of the urine and blood-serum of eclamptics does not depend upon some special poison, but is dependent upon its concentration. If the concentration of the injected urine was remedied by dilution, so that it approximated the normal specific gravity of urine, it made no difference whether the urine injected was taken from a healthy person, a pregnant woman, or one with eclampsia, the degree of toxicity of each was about the same. He came to the same conclusion as regards the poisonous quality of the blood-serum of eclamptics. Lastly came the ubiquitous germ. An eclampsia bacillus was discovered. However, it did not occupy the center of the stage very long, because it was soon recognized to be a harmless micro-organism which was often found in cadavers.

Of other theories supposed to explain the etiology of eclampsia, only one will be mentioned here, namely, the theory that the thrombi met with at autopsy are due to an agent causing coagulation necrosis and which has its origin in the fetus (Vollhard).

The writer's belief as to the causation of eclampsia is that in this disease we are dealing with uremia due to nephritis, and that pregnancy, labor, or the puerperium are simply coincidents which may also exert some deleterious influence upon the organism.

Some of the reasons for assuming this stand are:

Eclamptic seizures are common in uremia whether occurring in man, woman, or child.

The clinical picture is very similar in these cases.

The urinary signs are the same.

The findings at autopsy are much the same.

The prognosis and treatment are the same, except that in puerperal eclampsia, before delivery, the child has also to be taken care of.

While it is admitted that during pregnancy, in the presence of damaged kidneys, eclampsia is more likely to occur than in the nonpregnant state, it is desirable to bear in mind that pregnancy of itself does not cause eclampsia, because in some cases the convulsions do not appear until the child has been born for hours or even days.

The writer is of opinion that uremia, or eclampsia, is caused by the retention in the blood of the salts (principally sodium chloride) which the damaged kidneys are unable to throw out, in sufficient quantity, with the urine.

That it is principally this retention of salts which causes the symptoms of eclampsia by raising the molecular concentration of the blood and at the same time its specific gravity.

That when by some means—dilution of the blood, increase of urinary excretion, increased perspiration—by throwing off the excess of salts, the molecular concentration of the blood is reduced to (somewhere) near normal, the patient will, at least temporarily, recover. For reducing the molecular concentration of the blood in the patient only two methods seemed to be available:

1. Starving the patient.
2. Diluting the patient's blood by adding water.

It has been the invariable practice of the writer to withhold food from eclamptics for three days and to permit nothing to be taken by mouth except water, plain or carbonated.

To dilute the patient's blood, administering water by the mouth was inadequate, because comatose patients cannot drink, and when awake they may refuse it. In any case water is not absorbed by the stomach and to do good large quantities must be administered.

After considering all the routes, the bowel was chosen as the best absorbing surface.

It seemed to the writer that pure water created irritation of the bowel. The usual physiological saline solution was rejected as dangerous and illogical. If the patient is dying from a retention of salts in the blood it would be worse than folly to administer more salt in solution. After going over the field carefully, the writer decided that a solution of sugar would meet all indications. The reasoning which led to this conclusion was as follows:

The desideratum was to find a substance which, mixed with the water to be administered, shall be harmless and will not increase the molecular concentration and specific gravity of the blood, which are already too high.

Sugar was decided upon because of its high molecular weight. The weight of a molecule of sugar is stated to be 342, while that of salt is 58. It is clear that many more of the lighter or smaller salt molecules will go into a given volume of water, than the many times heavier or larger sugar molecule. So that the molecular concentration of the blood would be speedily reduced by diluting it with sugar water, whereas it would remain the same or be increased by administering salt solution.

This seemed rational and was done in several cases, two of which will be briefly reported here; and while under the sugar water instillation treatment, the specific gravity of the patient's blood was observed by Hammerschlag's method and recorded. It was found that remarkable improvement took place in the condition of the patients under the continuous rectal administration of sugar water by the drop method (Murphy) and that the specific gravity of the blood fell to 1052 from 1060.

Both cases made a good recovery. In addition to the sugar-water instillation only water was given by mouth for three days and the usual treatment in these cases carried out, namely, veratrum viride hypodermatically, patient wrapped in blankets surrounded by hot-water bottles to induce perspiration, catharsis, later salt-free diet. It was astonishing to see the large quantities of sugar water that were absorbed by these patients, and how the quantity of urine and perspiration increased,

bringing about improvement in the patients' condition from the start.

The following are the important points, told as briefly as possible, of the two cases mentioned above. They were both patients at the Jewish Maternity Hospital and I want here to thank Drs. Greenstein and Gosset, house surgeons, for constant care and attention to these cases while carrying out the treatment outlined.

CASE I.—Mrs. S. K., a Russian by birth, married and mother of one child, born spontaneously and living now, was examined in the antepartum room of the Jewish Maternity Hospital on September 5, 1909. Her personal and family history were not of importance as regards her present condition, except that she menstruated for the last time on the first day of February, 1909, and felt life about middle of June, 1909. She had complained of occasional headache and slight dizziness for a few weeks.

Examination proved her heart and lungs to be normal. She had slight edema of the ankles. The abdomen was of longitudinal ovoid shape, the fundus uteri rose to a height corresponding to about the eighth month. The child presented by the vertex, occiput to the right, fetal heart sounds obtained. Pelvic measurements were interspinous 20 cm., intercrystal 24 cm., external conj. 26 cm. Owing to distinct signs of nephritis she was asked to report on the following day and bring a specimen of her urine for examination.

However, she did not return.

When she was next heard from, it was a hurry call to her home. She was there delivered on the outdoor service, on October 29. Shortly after the delivery, which was spontaneous, the child being alive, she had a convulsive seizure. She was treated in the routine manner for eclampsia, by hypodermic injection of *Tr. veratrum viride*, gtt. x every two to four hours; chloroform during attacks; croton oil, gtt. i (once); compound jalap powder; nitroglycerin, gr. 1/100 every three hours; hot pack and a copious venesection followed by the usual intravenous saline infusion. This was varied by administration of potassium acetate and compound spirits of ether.

October 30.—Convulsions at 8, at 12.15, and at 3, lasting about ten minutes. The pulse was between 120 and 150 from 1 to 5 o'clock. Hot saline rectal irrigation. Morphine gr. 1/4 hypodermically and chloral hydrate grs. xx by mouth.

October 31.—Hot packs and same treatment continued. No convulsions, but patient very restless and pulse still rapid and of high tension.

November 1.—Patient seen in hospital. Comatose. Face flushed. Temperature 101.5° F. Pulse between 130 and 140, high tension. Tendency to delirium. Respirations 30. Standing orders. Modified Murphy drip started. This consists of a

rubber douche bag holding four quarts of sugar water, namely, granulated sugar one teaspoonful to each quart of water, kept at a temperature of 115° F., and the tube so constricted that the solution will pass only drop by drop into the rectum. *Tr. veratrum viride* gtt. x hypodermically every four hours or oftener till pulse drops below 80. Patient to be wrapped in blankets surrounded by hot-water bottles to promote diaphoresis. If restless codeine gr. 1/4 hypodermically. Nothing by mouth except seltzer or plain water. Withhold salt in any form. Specific gravity of blood 1058. This was practically the only treatment for the next three days.

She absorbed several quarts of sugar solution each twenty-four hours (exact amount not charted) perspired profusely, and regained consciousness gradually, the specific gravity of the blood came down to 1052 within a few days and she became quite rational again.

The sugar-water instillation was stopped and mouth feeding begun. She was given milk, seltzer, and later cereals.

On the third day, by mistake, the patient was given an ounce of magnesium sulphate, and twelve hours later became irrational again and tried to get out of bed.

The specific gravity of the blood rose within a few days slowly to 1056 and it remained there, till her discharge on November 14, 1909.

The urine on admission contained albumin and large and small granular casts. These gradually disappeared until her discharge, thirteen days later, when there was only a minute trace of albumin and no casts could be found.

She was discharged with her baby on November 14 and warned to abstain from the use of salt for at least six months.

CASE II.—Mrs. B. F., aged sixteen and one-half years and pregnant for the first time, was seen by courtesy of Dr. A. Lowit, on March 27, 1910. Her family and personal history were unimportant as regards this pregnancy, except that she is married one year and menstruated in her usual way about eight months previously.

She denies having had syphilis, gonorrhea, miscarriage, heart, kidney, or lung trouble, and considered herself to be in average health. For the last few weeks she noticed occasional but transient dizziness, slight headache, and some "spots before the eyes." She also noticed some swelling of her legs and in the morning a slight swelling of the eyelids.

Dr. Lowit examined her urine and, finding evidences of nephritis, requested the writer to see her.

On examination the young patient presented the typical picture of a nephritic. She was pale, her face somewhat bloated, and her eyelids edematous. The skin of the abdomen and legs pitted on pressure and the vulva was edematous to a degree. Examination of the heart and lungs proved them normal. She was pregnant toward the end of the ninth month with twins.

As eclampsia seemed imminent she was advised to immediately enter the hospital and have labor induced. Upon her arrival the same afternoon, a sterile soft-rubber rectal tube was inserted into the uterus, the vagina packed with gauze, and the patient put to bed.

Urinalysis showed the unmistakable signs of nephritis—the urine boiled solid in the test-tube showing a large quantity of albumin. Epithelial and granular casts were abundantly present.

Strong uterine contractions set in and as the pulse was hard and 120 per minute the usual treatment for eclampsia was instituted, namely, elaterin gr. 1/10 every six hours until copious stools were obtained. Hypodermically veratrum viride gtt. x every four hours or oftener till pulse rate came down to 80, dry hot pack, etc.

About nine hours after induction of labor the first stage was practically ended when the patient had a convulsion lasting about a minute. Dr. Scadron applied forceps and delivered a girl baby weighing four pounds and eleven ounces, then performed version and delivered the other girl weighing four pounds and three ounces, both living. An hour later the patient had another convulsion.

The writer did venesection drawing off six ounces of blood. Up to this time the patient had received hypodermically within seven hours seventy minims of Tr. of veratrum viride without showing any effect on the pulse, which was still rapid and hard. The writer concluded that the drug was probably inert, so ordered a good fluid extract of veratrum administered instead. This had the desired effect.

The constant rectal instillation of sugar water was started after the second convulsion, and she never had another convulsion. Diaphoresis became profuse. Specific gravity of the blood taken on March 29 was 1060.

The urine showed remarkable increase in quantity the first three days under the sugar-water instillation, namely:

First twenty-four hours lost a little urine (not measured) while defecating and involuntarily, quantity said to have been very small, and *one ounce* only was obtained by catheter for examination in laboratory. This boiled solid.

Second twenty-four hours under constant administration of hot sugar water rectally, amount of urine passed thirty-seven ounces.

Third twenty-four hours, 115 ounces.

By this time the pulse was soft, below 80 per minute, and the specific gravity of the blood 1056. On the sixth day postpartum specific gravity of blood was 1052 and it remained there until the eighth day postpartum which was the last day on which it was taken. On April 7, the eleventh day postpartum, the patient was convalescent, the urine normal—without a trace of albumin or casts.

She was discharged with her babies on April 11th, and cautioned to avoid salt for a number of months.

In conclusion it might be said that, while it is true that two cases, even if successful, are not sufficiently strong from a numerical standpoint to establish the claims of a new procedure in medicine, nevertheless the results of the treatment were so striking as to compel attention. The writer may be pardoned for expressing the hope that some of his colleagues who read this article will give the method a trial in cases of eclampsia, because he believes it to be a harmless and directly life-saving treatment.

616 MADISON AVENUE.

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## METRORRHAGIA AND UTERINE FIBROSIS.\*

BY

ARNOLD STURMDORF, M.D.,

New York.

AMONG the more urgent gynecological contingencies, there is probably none the occurrence of which we contemplate with more complacency, or the control of which we assume with greater confidence, than a bleeding uterus.

This complacency, born of familiarity with palpable routine etiological factors and this confidence, based upon the usual effectiveness of our therapeutic equipment against such factors, may be seriously disturbed by an infrequent type of metrorrhagia, occurring about the preclimacteric period, almost exsanguinating in severity or persistence, for which no palpable routine cause is in evidence and nothing in our therapeutic equipment effective, short of hysterectomy.

In gross appearance such an extirpated uterus reveals pale tissues of slightly augmented bulk and consistency.

Under the microscope, the small subendometrial vessels will be found increased in number and deformed in outline by a deposition of concentric fibrous layers, with well staining nuclei.

Similar vascular changes exist in the myometrium, the muscular elements of which are encroached upon and replaced by fibrous bundles and round-cell infiltration.

Clinically defined, uterine fibrosis represents a condition in which the uterus is converted into a rigid, engorged organ incapable of contraction, owing to a degeneration of its muscular and elastic elements, which are largely replaced by fibrous tissue traversed by stiff, tortuously deformed and dilated vessels.

\*Read at a meeting of the Medical Society of the County of New York, April 25th, 1910.

The question as to the relative significance and natural sequence of these vascular and myometrial degenerations in the causation of the uncontrollable bleeding is at the present time a theme of interesting debate among investigators.

Thus Theilhaber and his followers interpret the muscular changes as the fundamental and primary element in the condition, with the arteriosclerosis as a purely concomitant factor.

They base their contention upon an observation made by the present writer some eight years ago, demonstrating that, following established physiological laws, a normal uterus contracts at regular intervals not only during pregnancy, but during its entire functional existence: such contractions being essential to its structural and circulatory integrity.

An immobile muscle whether in the uterus or elsewhere degenerates; furthermore, the uterine veins being devoid of valves, there is no provision other than such muscular contraction to prevent uterine stasis and its consequences.

The proportion of muscular and fibrous tissue in a given uterus varies under normal conditions at different periods of life; thus, in the infant, approximately one-third of the myometrium—more properly called the “mesometrium”—consists of muscle tissue; at puberty, both blood-vessels and muscle develop rapidly until the normal adult type shows about two-thirds of its bulk to consist of muscular elements; after the menopause, the vessels and muscle atrophy, so that by the sixtieth year a marked preponderance of fibrous tissue normally prevails.

Any pronounced deviation from this essential proportion of muscular element in the mesometrium, whether congenital, *i.e.*, “hypoplastic,” or acquired, may, according to Theilhaber, be productive of uterine hemorrhage.

It is axiomatically accepted, that under ordinary conditions, bleeding from an otherwise normal uterus is controlled largely by the contractility of its muscular and elastic elements, and it would seem but logical to assume that any impairment of this contractility must manifest itself by a proportional loss of spontaneous uterine hemostasis.

Unfortunately, however, many facts obtrude themselves, the elucidation of which would carry us far beyond the practical limits of the present communication that will not permit of so simple a solution of the problem under consideration.

Palmer Findley, an ardent opponent of the myopathic origin of this form of bleeding, readopts Cruveilhier's term “Uterine

Apoplexy" and expresses his views as follows: "It is possible that the increase in the connective tissue of the myometrium may interfere with the circulation, but it is altogether certain, that in many cases, the primary cause lies in the walls of the blood-vessels, while the hyperplasia of the uterus is secondary."

Such, in sketchy outline, is the present status of the controversy on the pathogenesis of this condition, which is accepted as a clinical entity under the various terms, "Uterine Fibrosis," "Uterine Apoplexy," "Senile Hemorrhagic Endometritis," "Essential Metrorrhagia," "Metrorrhagia Myopathica," etc., etc.

Leaving the decision as to the relative significance of the angiosclerotic and myogenic changes to academic discussion, let us turn to those elements of clinical importance that demand our most serious consideration.

The extensive literature on this subject that has accumulated to the present time lacks convincing and elucidating data, illustrating in most of the cases merely that natural preponderance of fibrous tissue and arteriosclerosis normal to the senile uterus.

Reinecke and Martin report thirteen hysterectomies for the control of hemorrhage, all of the extirpated uteri revealed sclerosis of vessels and musculature, but, as Findley pointedly comments, these authors failed to exclude the possibility of obstruction to the return circulation from thrombosis, cardiac, pulmonary and hepatic disease, such as were found on autopsy in each of the eight cases reported by Von Kahlden.

In a case reported by Popoff there were kidney and heart lesions with pleural effusion.

Herxheimer's case also presented cardiac and renal lesions with aortic atheroma.

Palmer Findley reports one case of his own in which the immediate cause of the uterine hemorrhage proved to be an embolus or thrombus of the uterine artery, engrafted upon a generally disturbed circulation.

This personal experience prompted him to the final conclusion, that "Sclerosis of the uterine vessels alone and without co-existing general circulatory disturbance is insufficient to cause uterine hemorrhage."

This is true as far as it goes, but it does not go far enough, for we must add the various hematogenic, toxic, and metabolic disorders as well as perverted ovarian functions, all and any of

which, singly or combined, recognizedly exercise an etiologic influence in the production of metrorrhagia.

Terminology dominates our concept, and the terms "Fibrosis Uteri," "Senile Hemorrhagic Endometritis," "Myopathic Metrorrhagia," etc., all applied to this condition, while pathologically descriptive, are clinically misleading, in that they tend to circumscribe our diagnostic horizon and limit our therapeutic aim by focusing attention on local manifestations to the exclusion of remote general underlying factors.

In the present state of our knowledge, the diagnosis of uterine fibrosis could be established only upon the microscopic evidence of its existence in the extirpated uterus and upon our ability to exclude every other possible cause for, and our absolute inability to control, the existing hemorrhage.

We meet many cases of profuse, persistent, and apparently uncontrollable metrorrhagia, but, fortunately, we will find an extremely small number that will not ultimately reveal causes, other than uterine fibrosis, to account for the bleeding, and in our search for such causes it is essential to realize that we are treating not merely a bleeding uterus, but a bleeding woman.

Spontaneous uterine hemostasis under ordinary conditions is dependent upon a normal uterus plus a normal circulation of a normally constituted blood.

A normal uterus contracts, so will an abnormal one, though to a lesser degree, for no uterus was ever found to be entirely devoid of contractile elements.

Uterine contraction alone, however, will not control its bleeding, for an essential concomitant to such control is *normal coagulation*, which demands normal blood under normal pressure.

It thus becomes evident that our search for the cause and therapeutic indications in a given case of metrorrhagia must be focused upon the uterus, the circulatory apparatus, and the circulating blood.

An exhaustive elucidation of all the local and systemic causes of metrorrhagia would constitute a voluminous treatise, while the present communication must, for obvious reasons, be limited to the barest suggestive outlines only.

Our operative records in a long series of metrorrhagic conditions reveal one significant group of cases in which gross abnormalities within the uterus, by their nature and location, completely eluded tactile recognition prior to surgical intervention.

First in order of frequency among these unrecognized local

causes of metrorrhagia were fundal polypi; second, submucous or short pediculate myomata springing from the cornual area of the uterine cavity, and, last, malignant disease, limited to the upper endometrial zone, especially adenocarcinoma, which is notoriously insidious in development and progress, so that, barring the hemorrhage, it yields no physical evidence of its presence for a very long period.

It is noteworthy that in all of these cases the unrecognized pathological factor was located in, and limited to, the upper lateral angles of the uterine cavity, thus eluding recognition.

Among hematologic causes, pernicious anemia, which, prior to its hematological diagnosis, was interpreted as of simple nature secondary to the metrorrhagia, proved to be the primary etiological factor in two cases.

The mere mention of the various leukemic states, jaundice, scorbutus, and other toxemias, will recall conditions recognized as capable of inducing various degrees of a hemorrhagic tendency.

Functional disorders of the thyroid may influence menstruation to a marked degree, and the development of metrorrhagia in exophthalmic goitre, as of amenorrhea in cretinism, disclose etiologic probabilities as yet within that nebulous clinical vista in which our present knowledge of the correlated or perverted physiology of the ductless glands and their internal secretions is still shrouded.

All of these factors must be included in the study and excluded in a diagnosis of the condition under consideration.

The occurrence of a retinal hemorrhage or a sudden copious epistaxis is frequently the initial symptom pointing to cardiac or renal disease, yet these same conditions are but rarely sought in explanation of the same symptom appearing from the uterus; furthermore, the veins of the uterus and its adnexa, like those in the gastrointestinal tract, are frequently varicosed by cirrhotic processes in the liver and other portal obstructions; yet, while we recognize this varicosity as productive of hemorrhages from mouth or anus, we fail to connect the same cause and effect in metrorrhagia.

To recognize any systemic condition thus outlined as a cause of the uterine bleeding is to establish an imperative therapeutic indication and excludes uterine fibrosis; but while we are searching for and correcting these systematic causes, the local control of the hemorrhage urgently demands our prompt consideration.

It cannot be sufficiently emphasized that the failure of ergot, the tampon, and curet to control such hemorrhage does not necessarily demonstrate its uncontrollability, nor establish the diagnosis of uterine fibrosis; these are sovereign remedies when used in their proper time, case, and manner.

Every clinical manifestation represents a normal function perverted or diverted, and every corrective effort must be based upon a familiarity with the normal mechanism of that function.

To check any bleeding we must induce coagulation. To induce coagulation the blood current supplying the bleeding area must be retarded and reduced.

In the normal uterus such retardation and reduction of its circulation is accomplished by contraction, but it is a very significant and important fact that the blood flowing from a fibrous uterus like that shed from the normal uterus during its menstrual cycle shows little if any tendency toward spontaneous coagulation.

In other words, aside from, and independent of, any circulatory derangements, a condition seems to exist which may, for descriptive purpose, be termed uterine hemophilia, normally periodic in menstruation and abnormally persistent in fibrotic metrorrhagia.

To attribute this absence of coagulability under the given conditions to an intimate admixture of mucus with the blood, as hitherto taught and accepted, is clinically and experimentally untenable.

Blood coagulates in the nose, mouth, gastrointestinal tract, and upon all other actively secreting mucous membranes; furthermore, the only true muciporous glands found within the uterus are limited to the cervical area, while the corporeal endometrium, into and from which the blood is first shed, presents neither the histological nor physiological characters of a mucous membrane, its scant serous secretion never yielding a mucine reaction.

*This secretion, however, contains an element present normally during the menstrual cycle and abnormally continuous in some of the metrorrhagic cases under consideration capable of inhibiting coagulation in any blood with which it comes into contact.*

*This is the element which dominates the result of our treatment and as we do not at present possess any direct means of counteracting it, we must attempt its circumvention by retarding the local and general circulation in a manner to induce coagu-*

lation before the blood is extravasated into the uterine cavity proper. In other words, we must attempt to prevent contact of the blood with this inhibiting element.

Such a result may be accomplished in most cases by a combination of medicinal and mechanical measures.

Of the medicinal, the so-called vasodilators, especially atropin and nitroglycerin, retard the general blood current by lowering vascular tension, while the local uterine circulation can be reduced by very firm, snug, and full intrauterine packing, so applied as to substitute mechanical compression for the normal contractions of the vascular area.

The atropin or nitroglycerin must be pushed to their full physiological limit or point of toleration, while the intrauterine packing should be applied under anesthesia if possible, through a cervical speculum after thorough dilatation, accurately and tensely filling every portion of the whole uterine cavity to the external os.

This firm intrauterine packing, supported by an elastic comfortably snug vaginal tampon, preferably of cotton-wool, should not be removed or disturbed without special indication for at least four days, during which period, the adoption of postural adjuvants are of the greatest utility: not merely the customary elevation of the foot of the patient's bed, but by such mechanical arrangements as will permit the patient to maintain comfortably a more or less permanent knee-chest position with the pelvis elevated to at least 45 degrees.

In very urgent cases, impeding the venous reflux from the extremities by intermittent annular constriction as suggested by Dawbarn some years ago for inaccessible hemorrhages in other parts, has yielded the happiest results.

The curet, except for diagnostic scrapings, has no place in our therapeutic armamentarium for this condition; it should never be used without an obvious indication, and the existence of such an indication at once places the case outside the category under consideration.

And so I mention ergot only to condemn its use in the most emphatic terms. It does not and cannot control this form of metrorrhagia; its specific influence upon muscular contraction in the healthy uterus is never realized in these myopathic uteri; it cannot contract or close rigid calcareous vessels, while its augmentation of the general vascular tension only tends to increase or prolong the bleeding.

The same applies to the use of cotton-root bark and hydrastis; while stypticin, styptol, and all the later synthetic oxytoxics are quite inert.

If the treatment as outlined shows a tendency to control the hemorrhage, the packing may and should be removed and renewed every fourth day; if, on the other hand, such a tendency is not manifest, our next essential step is the digital exploration of the uterine cavity. To do this thoroughly the cervix should be exposed and drawn to the vaginal outlet in the usual manner, through a transverse incision, about  $2\frac{1}{2}$  cm. above the external os, it is freed from the bladder by blunt dissection as far as the peritoneal reflection.

A median longitudinal section of the exposed anterior uterine wall will now permit the introduction of the rubber-covered exploring finger into the uterine cavity.

Only in this manner can any unusual condition which has escaped notice be recognized and corrected, after which the uterine and vaginal incisions may be sutured in the ordinary way.

Notwithstanding its title, the object of this paper is not an elucidation of the subject of uterine fibrosis, but, paraphrasing a popular paradoxical witticism, to show when a uterine fibrosis is not a uterine fibrosis; for, when all is said and done in the study of this condition, when case after case reveals recognizable but unrecognized causes—other than fibrosis—as productive of the hemorrhage, a conviction dawns upon our conscience that recalls the words of the immortal Traube, who, when acknowledging some diagnostic error, would murmur in a soft, meditative, self-reproachful way:

"Have we carefully observed all the facts of the case?"  
"Yes."

"Did the art permit of a judgment on the facts under consideration?" "Yes."

"Did we reason correctly upon the data before us?" "No."

"Wir haben nicht richtig gedacht."

51 WEST SEVENTY-FOURTH STREET.

## MARY PUTNAM JACOBI.\*

BY

JOSEPHINE WALTER, M. D.,

"Tho' the radiance which was once  
 Be now forever taken from my sight,—  
 Though nothing can bring back the hour  
 Of splendor in the grass,—of glory in the flower,  
 We will grieve not,—rather find  
 Strength in what remains behind."

WORDSWORTH.

YES, the "splendor in the grass, the glory in the flower," have passed away, but the ever-living seed is still here, protected and nourished by the mother-soil, and ever ready to blossom, again and again. In the seed that "remains behind" let us find strength.

The words of love and loyalty, of reverence and devotion, of keen appreciation, to which we have listened this evening would surely indicate that the "splendor in the grass, the glory in the flower," "what remains behind," are deeply implanted in the hearts of all of us.

How can we best interpret these words of our poet as illustrating the life of Mary Putnam Jacobi? It would seem as if her many varied traits of character might be justly likened unto the "splendor in the grass," her exceptionally brilliant achievements unto the "glory in the flower," her example unto "what remains behind." In contemplating the "splendor in the grass"—her traits of character, they are so numerous and so closely related, they crowd in so upon one's mental vision, it is difficult to separate them, to select those which more specially made the "splendor in the grass."

One trait, however, may be noted as standing out prominently, and that is, *her knowledge of what she did want*. Many know what they do *not* want, but it is the few only who know what they *do* want. Mary Putnam Jacobi knew what she wanted from her earliest years, and with her indomitable energy, her steadfastness of purpose, never-flagging courage, she accomplished what she set out to do.

\*Address delivered May 16, 1909, as Retiring President of the Woman's Medical Association, New York City. Evening devoted to Mary Putnam Jacobi, Academy of Medicine.

One of her first desires—upon which purpose followed quickly—was to become a physician, and in order to accomplish this, we see her self-reliant, reluctant to accept from others when she could do for herself, becoming a teacher in order to secure the necessary funds.

We all know that she graduated from the Woman's Medical College of Pennsylvania, one of the brilliant students of that famous woman's medical school.

The next interesting glimpses we get of "the splendor in the grass" are in the letters she wrote home to her family after she had gone to France to study. There we learn of the insistent efforts she made to enter l'Ecole de Medicine, in Paris, of the cheerful effort she made each time, even though she thought she had heard the bolt withdrawn, and she was informed the doors of the college still remained closed to her, of the sweet, affectionate, cheering words she sends to "her little mother" and the dear ones at home, knowing that time was fleeting and that she had not yet reached her goal and fearing that their hearts were heavy and discouraged—as perhaps was hers, for although her considerate nature would not allow her to write a line that might add to their discouragement, we cannot but believe even with her sanguine temperament, there must have been moments of great hope and great disappointment like (as) the traveler on the roadside who, seeing his distant destination made visible by the sun's light rays, is deceived into believing his toilsome journey is near its end. So with Dr. Putnam, success seemed near when yet so far.

But perhaps it was the effort unsuccessful that quickened her energy—buoyed her up to renew the effort—for, ever tenacious of the object she had in view, to enter the college of medicine in Paris, where no woman had yet entered. Stimulated by the importance of the object to be obtained, her efforts did not relax; she tried and tried again, until finally, although more than a year had elapsed since she had left home with purpose fixed to succeed, she was able to send the joyous news of her success to the dear ones at home, and in a second message, that came a few years later, telling of her brilliant graduation, we can read more than the ordinary exultation of the intellectually successful—one feels the joy, the happiness of one who accepts success as a proof of the worthiness of the object pursued, one feels the deep gratitude, almost reverential thankfulness to those who had not only made it possible for her to strive for this prize, but whose

confidence in her, and patience with her at first unsuccessful efforts, were an additional stimulus to success. *These* are glimpses of her character that perhaps too few have been allowed to see.

Later in life many of us met her as teacher, guide, friend—and here a whole new array of splendid characteristics greets us: strong-minded yet sympathetic, ever eager, ardent, enthusiastic, always tolerant of minds inferior to her own, considerate of one's shortcomings, but in earnest in pointing out the way to lessen them, ever an example of honesty of purpose and deed even to the smallest detail, never arrogant or egotistical, ever modest, simple, unchanged even at the very height of her success and public recognition.

We need not dwell longer on "the splendor in the grass." But first, one word only in regard to "the glory in the flower"—her achievements. I would not have felt justified in illustrating the life of our beloved colleague with those beautiful lines in Wordsworth, were "the splendor in the grass," "the glory of the flower" made up of these traits of character only—of literary, professional achievements only; but they seem to me peculiarly expressive because with and side by side with *these* unusual achievements there shines forth what is the completion and perfection of womanhood, her wife- and motherhood.

And now, let mine be the pleasant and appropriate privilege, as your retiring president, to speak on the closing line of "Wordsworth's verse," "find strength in what remains behind."

Many of us even to-day, though nearing the sunset of professional life, are made to realize again and again what Mary Putnam Jacobi did for us, and we have often found strength to continue in recalling the struggle she made. Surely, then, those of you who are still aglow with the hope, the promise of the morrow, should *not fail* to find strength, inspiration, in the work done by Mary Putnam Jacobi.

As we see ourselves to-day standing on this heritage ground, foot firmly planted on the structure she helped so largely to erect—*below*, the clear, broad, smooth-trodden road leading up to this height; *above*, the as yet dimly visible, untrodden road, that surely leads to a higher plane—we must bow in homage, with feelings of deep gratitude to those who have cleared this road—to those who have not only prepared the mortar, molded the bricks, but fashioned them into the structure on which we stand so confidently to-day.

We should be impressed with the heritage left us, with the strength to add to this structure in a way worthy of the foundation, with the responsibility, to keep ever smooth, wide and open the road already made so, and to unite in our fullest strength to open, broaden and smooth out that road, to-day only dimly visible, that leads to better opportunities for us, that leads to the height where dizziness will be but the result of professional inability to stand firmly.

All this will require "the strength of what remains behind"—the strength to continue the struggle—for struggle there will always be. But whereas in the past this struggle has been largely individual, owing to the limited number of women physicians, to-day and in the future, with so many women in medicine, this struggle must be fought by all united: cooperation must be the watchword. We are still the minority in the profession, and our success in this struggle will be in direct proportion to the help we give one another, to the kindly and timely service by word and deed, to the loyalty and sympathy shown, to the mutual good feeling and confidence expressed.

Let us stop and reflect, not only on what Mary Putnam Jacobi personally and as president put into this structure, but what she did for us as teacher and friend, in preparing us to be the future workers on this structure: the sympathy she extended so largely and fully, the patience and interest manifested time and time again; how she quickened into renewed effort *our* flagging spirits, how she set our minds in motion and strengthened our mental footsteps, how she put us in the right road when our untutored steps would have led us astray, how she disciplined us mentally and morally, not only giving us of her own vast store of knowledge, but striving to make us realize, by her (own) deeds and words, that success for us in medicine depends on the mind being ever occupied with some thought, word, or deed fruitful to the interest not only of the individual, but to the interest of all.

If in our midst the names of Dr. Blackwell and Dr. Mary Putnam Jacobi are to be justly, indelibly inscribed on the foundation, let other names prove worthy to be inscribed in the niches on the superstructure. When we compare the opportunities offered at the time Mary Putnam Jacobi developed "the glory in the flower" with those we have to-day, surely these names should be forthcoming. All over this country, in France, in Germany—conservative but erudite Germany—Switzer-

land, England, Canada, colleges sufficient in number are open to, and for, women—the number in Dr. Putnam Jacobi's time was very limited. To-day, anywhere in our country women are accepted, nay invited to become members of medical societies, scientific associations, and papers read by them are listened to with as much respect and attention and discussed as freely and fully as those of our male colleagues. A strong contrast to the fight Mary Putnam Jacobi made to secure recognition in the Medical Association of Pennsylvania and the County Medical Society of Philadelphia. Again, in our land wherever girls and women are housed in numbers, as in schools, homes, insane asylums, the position of physician awaits a woman—there were few such positions in Mary Putnam Jacobi's days of struggle. To-day our City Board of Health, while demanding the best to do its scientific work, is satisfied that it finds this in the well-trained woman physician. Mary Putnam Jacobi saw no such opportunity as a reward for her efforts. Even the hospital opportunities for women are increasing all over the country, a fact we must not fail to appreciate even though some be still closed to us. Here, in this city is an example of what time is doing for women in this respect: In the New York Infirmary for Women and Children in Dr. Putnam Jacobi's day there were but a small number of physicians enjoying the opportunities of that modest little hospital; there were but three beds for children, no medical ward, no surgical ward, no beds for eye and ear cases. To-day not only is the number of attending physicians more than doubled, but a summer or adjunct corps of attending physicians is appointed every year; and following the opening of the new hospital in the fall an assistant physician is to be appointed yearly to each service. The children's ward will have fourteen beds; the medical, ten beds; the surgical, ten beds: in all the departments opportunities for study, observation, and practical work are to be increased. Perhaps even the day is not so far distant when these increased opportunities may again be doubled, this day being largely dependent on the necessary funds and, what is still more necessary, well-trained (medical) women physicians! So we expect "with what remains behind" and with all these opportunities we should find strength to add to the solidity, to the growth of the structure already erected. But to do this we must see to it that our bricks and mortar are made of materials that will hold firmly and well: let each one do her building with earnestness, zeal, modesty, ever considerate

of and loyal to one another; let each one in her earliest and latest efforts, while developing the doctor, not neglect the development of the woman. It is the true high-toned sense of right and wrong, so instinctive in the female make-up, that she must cultivate equally with her skill as a surgeon, her brilliancy and accuracy as diagnostician and therapist, her patience, technic, keenness as a research worker. A college medical education, even the very best, is not *all* that is necessary, but *that* education the result of having fought, failed perhaps, only to fight again and this time succeed, that education which gives strength of character, develops honesty of purpose, a sense of justice even to the limit of self-forgetfulness, such an education is as necessary as that of the medical college. And when this preliminary education is obtained, when college life is over and the necessity for independent, individual effort comes, what trend shall this effort take?

It is evident that the field of medicine is enlarging, becoming more varied each day. The rôle that preventive medicine is to assume in the future is well-established by what it has already accomplished. Smallpox, diphtheria, yellow fever, malaria, are telling land-marks in the results of scientific medical research. While this emphasizes the future importance of the botanist, the biologist, the physicist, the chemist, the bacteriologist, it also suggests a line of work well suited to the efforts of some women. Prof. Osler in a recent address laid much stress on this point when he asserted that women were well fitted for such work, expressing his belief that this was to be largely the future field of woman's work in medicine. There are many obvious reasons for believing that women may in the future devote themselves to such lines of work. The young woman studying to-day is not so generally, as formerly, compelled to do it with the view or necessity for self-support; she is often college-bred, therefore not content to let her thus healthily stimulated brain lay—go fallow—and seeks a further healthy stimulus: she finds it in the class-rooms and laboratories of a medical college, working here faithfully, with the intention to pursue after graduation not the practice of medicine, but some scientific branch of it. Nature in her normal and abnormal conditions, as seen under the microscope, as studied in the crucible and in the oven, appeals to many women. Along these lines of work women can be a true help to those women working along more practical lines, for through her scientific research she makes herself a

necessary adjunct to every hospital, thus becoming, perhaps, the entering wedge for her sister-colleagues in other departments. Along those lines, self-support, should it be the object, comes sooner than along other lines, and while home-ties are not encroached upon, so sacrificed, the opportunity is much greater and more brilliant to contribute to the world's store of scientific medical knowledge, that knowledge which reveals the very nature of the abnormal as contrasted with the normal and which gives the clinician greater control over disease. And, finally, it gives the woman a chance to enroll her name among the world's benefactors, and *thus* to "inscribe it on the bricks and mortar added to the structure."

However, the fact that all scientific medical results are not to be obtained in the laboratory only and that other fields of medical work demand the attention of women must not be forgotten. Prof. Muller from Munich, in his address a few weeks ago at the Academy of Medicine, laid *his* emphasis on the assertion that scientific medicine is to be studied at the bedside; and it may be justly and strongly added, no matter how great may be the future discoveries in the laboratory, how much may be done to prevent "approaching disease," preventive medicine will have to be most active, most searching, to anticipate, to overcome the baneful physical results of civilization. The ills of human flesh crying out for relief, for cure, will always be with us; the birth of the individual, the development of the individual, the death of the individual, will ever continue under conditions more or less abnormal, thus demanding the physician's help. This help woman is well suited to give—the practice of medicine appeals strongly to her nature, for the desire to serve, to help, to succor, to relieve a fellow-being, is innate in woman and should make of her a patient, painstaking practitioner; her conscientiousness should make of her an honest practitioner; her own physical nature a sympathetic practitioner; her quick intuition, her attention to details, her indifference to pecuniary reward as compared with her interest in her patient's welfare, a reliable practitioner. And if her response to the cry of the sufferer, her efforts to relieve, to cure the crippled in mind and body, are not medical contributions chronicled in the public archives, they are chronicled in the hearts of those she has helped, and she *also* has gained the right to have her name "inscribed on the bricks and mortar she brings to the structure."

Let me, in closing, quote as an encouragement to us all the fol-

lowing words of John Lord, in his work entitled "Great Women": "There is one profession which women are more capable of filling than men: that of physician to their own sex—a profession most honorable and requiring great knowledge as well as great experience and insight. For *my* part, I see no more encouraging signs of progress in society than in the advancing knowledge of favored women; and I know of no more splendid future for them than to encircle their brows with these proud laurels which have been already accorded—laurels, which with reason and experience assure us they may continue indefinitely to win."

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## OBSERVATIONS ON THE MECHANISM OF THE THIRD STAGE OF LABOR.

BY

PAUL T. HARPER, M. D.,  
Albany, N. Y.

UNDER the mechanism of the third stage of labor the writers have practically agreed upon the method by which the placenta becomes detached. No such agreement has been reached concerning the manner of its expulsion.

In 1789 Baudelocque described two methods of delivery of the placenta. These methods summarized are as follows: 1. If the separation of the placenta commenced at its center the organ became "inverted upon itself" and presented by its fetal surface. 2. If the separation commenced at the circumference, particularly if "in the neighborhood of the internal os," the placenta became "rolled upon itself as a cylinder, its long axis corresponding to that of the uterus." The placenta then presented by its lower margin.

Each method of delivery has been maintained by different writers to have been noted with greater frequency, and each has been termed normal. By the majority of present-day writers the presentation of the placenta by its fetal surface is considered common. That no definite agreement has been reached is apparent from the statement of Edgar that "the marginal presentation is usual and normal."

The behavior of the membranes in their expulsion has received less attention than the manner in which the placenta is delivered. There is apparent excuse for added consideration of each question. Such consideration is especially warranted if it can be

shown that there is a true abnormal mechanism of expulsion of placenta and membranes; abnormal because uncommon and often pathological.

The writer desires to present a series of observations on the appearance of the placenta and membranes in expulsion and the examination of them after delivery. He would interpret these observations, if possible, in the light of the physiological conditions that exist within the uterus during labor. The whole is offered as a practical contribution toward arriving at a normal mechanism of the third stage of labor.

The clinical facts given are based upon an observation of 150 consecutive deliveries. Unfortunately, accurate record was not kept; the actual frequency therefore with which the various conditions obtained cannot be given. The observations, however, are correct, and are as follows:

1. The placenta was usually delivered as an inverted cone, the fetal surface presenting; the membranes trailing behind, reversed.

2. Infrequently (in less than 10 per cent.) the placenta was delivered edgewise; the membranes trailing behind, not reversed (*i.e.*, their anatomical relations preserved).

3. The placenta never appeared as an inverted cone, the maternal surface presenting.

4. Modifications of the "inverted cone" and the "edgewise" presentations were noted.

5. The rupture in the membranes in the "inverted cone" presentation was central or nearly so; in the "edgewise" presentation usually lateral or marginal.

6. Stripping of portions of chorion from the underlying amnion with subsequent retention, and detachment of the membranes from the anterior margin of the placenta with or without retention of portions of the membranes so separated were noted frequently in the "edgewise" presentation. Stripping of portions of the chorion or of portions of the amnion and chorion was infrequently noted and detachment of the membranes from their marginal insertion never observed in the "inverted cone" presentation.

7. The passage of several ounces of blood immediately after delivery of the placenta occurred frequently in, but was not a characteristic feature of, the "inverted cone" presentation. In many cases the delivery of the placenta was practically bloodless.

8. The membranes invariably followed the placenta in expulsion.

In order to interpret the foregoing, it is necessary first to review certain anatomical and physiological facts concerning the uterus in the third stage of labor.

The common implantation of the placenta is upon the anterior or posterior wall near the fundus. Lower situations are less frequent; those at the fundus rare.

The uterus in labor is divided physiologically into an active upper and a passive lower segment. The dividing line between these segments and the structure representing, functionally at least, the internal os during labor is commonly considered to be the margin of the contraction ring.

These features become most marked during the height of a uterine contraction, and by some the contraction ring is claimed to be existent only at that time. Between pains the divisions may not appear, and the general shape of the uterus is ovoid. During a uterine contraction the upper segment becomes thickened and generally spherical in shape. The contraction ring stands out prominently; the lower segment contracts less firmly, or remains passive, and with the vagina becomes converted into what might be termed a hollow cylinder.

For purposes of discussion, the term "internal os" is applied to the functioning contraction ring. The strength of the contraction of the latter, measured by the firm grasp the structure often maintains upon the after-coming membranes or upon a douche tip introduced for purposes of intrauterine irrigation, is a matter of common experience.

The essential cause of the separation of the placenta, commonly situated in the upper segment toward the fundus, is the contraction of the uterine muscle. Such contraction decreases the size of the placental site and compresses the placenta to about one-half its normal size, when the organ becomes relatively a firm body. Such contraction will partially separate the placenta; the continued contraction will complete its detachment, when the placenta becomes a foreign body to be acted upon as such by the intrauterine forces.

When the roughly spherical upper segment contracts the cavity becomes encroached upon, in general, equally from all directions except from below where the internal os is located. The margin of a circular, flattened body within the cavity, especially if the diameter of the body approach that of the

interior of the cavity, will be in general equally pressed upon by the contracting walls. As the result of this pressure, the body will yield in the direction of least resistance, which is toward the center of the cavity, and will become converted into a cone, its apex and exterior being represented by the surface originally directed toward the interior.

The contraction of the walls continuing, such a body will be directed first toward the center of the uterine cavity. Such direction will obtain for a like body in any position within the cavity except in the region of the internal os. The second direction imparted to the body will be downward toward the internal os, since the pressure at this point upward toward the center of the upper segment is nil.

Pressure toward the center of the "ring" from all points on the margin of the contracting internal os will be approximately equal. Contraction of the ring upon a body lying within it will cause the body to yield in the directions of least resistance, *i.e.*, above and below. A circular, flattened body lying exactly within the ring, when contracted upon, would yield at its center which would be directed toward the vagina, since the resistance in that direction is less than from above. A body entering the contraction ring at an angle would have only the portions of the margin in contact with the os acted upon. At the contraction of the ring, the margins in relation with it would become approximated, bending the body upon itself but away from the center of the ring; the extremities of the body (not being acted upon by the contraction ring) would be directed upward toward the upper segment and downward toward the vagina. The general shape of the body (the placenta) then is that of a hollow cylinder, in which form the contracting upper segment forces the placenta through the ring and into the lower uterine segment and vagina.

The lower uterine segment and vagina are characteristically less active. A body passing through these generally cylinder-like structures will tend to accommodate itself to the general shape of the canal formed by them. A circular, flattened body would then become folded upon itself and lie with its long axis in that of the canal. Such a body would appear at the outlet of the vagina by its margin.

The clinical facts noted will be considered under separate headings, as earlier given.

1. The placenta was usually delivered as an inverted cone,

the fetal surface presenting; the membranes trailing behind, reserved.

It has been shown how a body like the placenta, freed from its usual attachment in the upper segment, would be converted into a shape resembling a cone and be directed first toward the center of the upper segment then toward the internal os. Since the apex of the cone is mobile and the base much less so, being pressed upon by the uterine walls, the former will be directed toward the internal os. The placenta presenting at the internal os as an inverted cone favors dilatation of the latter and the passage of the placenta through it.

When in the lower uterine segment and the vagina, the placenta lies in a canal tubular in shape and characteristically passive. Motion through this tube tends to change the shape of the placenta as has been described. But the lower segment and vagina are relatively short; the ordinarily weak forces being active for not sufficient distance to alter markedly the shape of the body passing through them. They do account, however, for the variations (to be mentioned) from the type of delivery that is common.

Negative pressure is probably the essential factor in maintaining the union between the fetal membranes and the uterine walls. With the escape of the uterine contents (the liquor amnii and later the child), the membranes are thrown into folds, as the uterus contracts, and may become partially separated. Any anatomical adhesion of the chorion to the decidua that may obtain could persist in spite of uterine contraction. As the placenta is directed toward the center of the uterine cavity and then through the internal os, it passes through the center of the sac of membranes still in contact with the uterine walls, forcibly separating the membranes in its advance. It finally leaves the sac of membranes at the point of earlier rupture in them. The membranes follow the placenta, which is presenting by its fetal (amniotic) surface, and are delivered reversed, *i.e.*, the amnion on the outside.

2. Infrequently (in less than 10 per cent.) the placenta was delivered edgewise; the membranes trailing behind, not reversed (*i.e.*, their anatomical relations preserved).

Various degrees of lower implantation of the placenta have been met with. Separation of the placenta occurs along the lines described for its common, higher implantation. As more of the characteristically passive lower segment is encroached

upon, the separation from mere retraction of the placental site becomes less complete and the pressure from above outward is a more prominent factor in its complete detachment.

The placenta in the lower positions encroaches upon, or may occupy, the lower uterine segment and comes in actual contact with the functioning contraction ring, which marks the upper limit of this segment. When so situated, the powerfully contracting ring becomes the principal factor in determining the delivery in the way already described.

Passage through the tubular lower segment and vagina tends to preserve the cylinder-shape assumed by the placenta. As the relaxed outlet is approached, the placenta will unfold; the margin (edge) presenting thus becoming straighter as the vaginal outlet is larger and has preserved less tone.

For several reasons the membranes trail behind with their anatomical relations preserved. The placenta being a solid body and readily acted upon leaves the uterine cavity first, forcibly separating the membranes from the walls of the uterine cavity in its advance. Being at all times directed away from the center of the contraction ring toward the uterine walls, the placenta is not delivered through the center of the sac of membranes as when under the full influence of the upper segment; the membranes follow the placenta then not reversed, but with their anatomical relations preserved, *i.e.*, the chorion on the outside.

3. The placenta never appeared as an inverted cone, the maternal surface presenting.

In the common and higher implantations, the pressure of the contracting walls, applied most effectually about the margin of the placenta, causes the latter to yield theoretically at its center and be directed in the line of least resistance, *i.e.*, toward the center of the uterine cavity. The apex and outer surface of the cone so formed (continued contraction of the uterine walls maintains the shape) will be the surface originally directed toward the center of the uterine cavity. The maternal surface is not so directed. It could not become the apex and outer surface of the cone and so delivered.

In the lower implantations the functioning contraction ring and the cylindrical lower segment definitely determine the shape the placenta is to assume in delivery.

4. Modifications of the "inverted cone" and the "edgewise" presentations were noted.

A frequent modification noted was the presentation of the

placenta by its fetal surface at a point not far from the margin; occasionally a portion of the margin would appear, but in every case the characteristic feature was the presentation of the placenta by its fetal surface.

Such modifications are to be considered as transitions between the "inverted cone" and the "edgewise" (cylindrical) presentations; the transition from one to the other being more complete as the lower uterine segment and vagina are of greater length, of greater activity, or as the resistance offered to the passage of the placenta (because of its size) is greater.

A less common occurrence was the bending back of the placenta at its anterior margin, so exposing more or less of its maternal surface. If the advance of the placenta in its cylindrical form is more rapid than that of the membranes through the internal os, the tension of the membranes upon the placenta is greatest at the anterior margin of the latter. The effect of this pull is to bend the placenta back upon itself in the direction of the internal os; the maternal surface then becomes exposed. Therefore more of the maternal surface will appear as, with the placenta advancing edgewise, the pull at the contraction ring upon the trailing membranes is greater and as the latter resist tearing at the anterior margin of the placenta.

This is to be looked upon as a variety of the true "edgewise" presentation, occurring quite as frequently as the latter.

The edge of the placenta presenting will be less curved (*i.e.*, the cylindrical shape of the placenta will be less preserved), as the placenta can more readily unfold; this the placenta can do, as it is smaller and the vaginal outlet larger.

5. The rupture in the membranes in the "inverted cone" presentation was central or nearly so; in the "edgewise" presentation usually lateral or marginal.

When the membranes have ruptured spontaneously the rent will appear at or near the point of least resistance, which point the internal os would represent. When ruptured artificially, the rent must appear at the exact location of the os. The rupture in the membranes then indicates their lower extremity when in their anatomical position within the uterus. With the site of rupture as a fixed point and knowing the distance between the point of rupture and the margin of the placenta, the height of the implantation can be quite accurately determined.

Membranes expelled with the point of rupture central or nearly so would denote a placental implantation (at or) near the

fundus. A placenta so situated is subject to the forces of contraction in the upper uterine segment. These forces tend to invert the placenta in the manner in which it is found to be delivered.

On the other hand, membranes expelled with the rupture lateral or marginal indicates a low insertion of the placenta. A placenta so situated is influenced in the main by the activity of the contraction ring, the tendency of which is to fold the placenta upon itself as a cylinder in which form it is found to present.

#### 6. Detachment and retention of portions of the membranes.

The general characteristics of the fetal membranes should be considered. The outer, or chorion, is friable, opaque, and readily torn from the amnion to which it is only fairly adherent and from the margin of the placenta to which it is attached. Scattered over it there often appear small, irregular, adherent patches of decidua. The inner, or amnion, is tough, fairly transparent and thinner than the chorion though tearing much less readily. Though the amnion is not attached to the margin of the placenta, because of the adhesions between it and the chorion, it may tear from the margin of the placenta to which the chorion is attached.

When the placenta is delivered edgewise the membranes follow with their anatomical relations preserved, *i.e.*, the chorion is on the outside. Following the passage of the placenta through it, the internal os contracts down upon the friable chorion perhaps irregularly roughened by adherent particle of decidua. (The strength of the grip of the internal os upon the membranes has been experienced by all who have endeavored to hasten the delivery of the latter by pulling upon them.) Such contraction may result in stripping portions of chorion from the underlying amnion as the membranes advance.

The membranes may remain intact and be held tightly by the internal os. As the placenta advances "edgewise" (either spontaneously or in response to Credé expression), the strain upon the membranes becomes greatest at the anterior margin of the placenta. The result of this pull may manifest itself in one of two ways. If the membranes are tough and refuse to yield, the placenta will bend at its anterior edge and be directed back toward the cervix. As a result, more or less of the maternal surface will be exposed (as has been mentioned). If the membranes are less strong, they yield at the point of greatest stress,

which is at the anterior margin of the placenta, and are detached at that point. The placenta continuing to advance will cause the tear to extend around its margin, or the part of the membranes already detached may be torn from the remainder still adherent to the margin and be retained by the contracting os.

Any or all of these conditions may obtain depending upon the toughness of the membranes, the strength of the contraction of the internal os, and of the forces directing the placenta onward.

When the placenta is delivered as an inverted cone the membranes follow reversed; that is, the shiny, tougher amnion is on the outside. The same contraction of the internal os and advance of the placenta occur. However, the pull upon the membranes is less effectual because of the lessened resistance to passage through the os the smooth surface of the amnion offers. Too, the membranes do not tend to become detached for the pull is distributed in general equally about the entire margin of the "inverted cone" and (also important) in a line in which the membranes and placenta anatomically meet.

In either presentation portions of chorion may be retained within the uterus, being stripped off in separation of the chorion from the decidua.

That the conditions mentioned were noted rarely in the first mechanism and with relative frequency in the second would indicate that the essential factor in determining the second mechanism (namely the contracting internal os) was an equally important factor in bringing about separation and retention of portions of the membranes.

7. The passage of blood immediately after delivery of the placenta was not a characteristic feature of the "inverted cone" presentation.

By some, the essential cause of separation of the placenta and its presentation as an inverted cone is claimed to be a retroplacental hemorrhage. Such bleeding would separate the placenta and ordinarily would not appear until the placenta, acting as a tampon, had been delivered. But any blood in the uterine cavity, with the placenta in the position described, would be effectually held back until the placenta had been delivered. If a true retroplacental hemorrhage were the important factor in the separation of the placenta and its delivery as described, we should expect to have found a relatively large amount of blood immediately follow the placenta in its delivery in the majority of instances; but such was not the case.

As routine in each case, the fundus was followed down as the child was born, and persistent, gentle massage maintained throughout the third stage. The efforts were, as a rule, successful, the fundus remaining firm; and, as has been stated, in many cases the delivery of the placenta was practically bloodless.

Since the type of bleeding described did not occur in the majority of "inverted cone" presentations (and, too, any intrauterine bleeding at the time would manifest itself in like manner), and since many placental deliveries were accompanied by no bleeding, it may be argued that retroplacental hemorrhage is neither the cause of nor an important factor in the separation of the placenta and its delivery as an inverted cone with the fetal surface out.

8. The membranes invariably followed the placenta in expulsion.

Were the membranes completely separated from the uterine walls with the escape of the liquor amnii and the child, they would readily be delivered before the still-adherent placenta; especially would this be true if the insertion of the latter were low. That they invariably follow the placenta in delivery shows that the advance of this organ is the essential factor in determining their separation.

#### SUMMARY.

A. The usual implantation of the placenta is near the fundus; this we determine from the fact that the rupture in the membranes is commonly near the center. The essential cause of separation of the placenta is contraction of the uterine walls with retraction of the placental site, and not retroplacental hemorrhage.

The continued contraction of the active, upper uterine segment converts the placenta into a cone the apex of which is directed first toward the center of the uterine cavity then toward the internal os. The placenta thus travels through the center of the sac of membranes, forcibly separating the latter and reversing them as they follow the placenta advancing through the internal os.

The grasp of the contracting internal os upon the tough, shiny amnion (being on the outside of the reversed membranes) exerts tension upon the entire margin of the advancing (cone-like) placenta. With the mechanical advantages thus offered,

the membranes are commonly expelled intact and adherent to the placenta presenting by its fetal (amniotic) surface.

The presentation described is less typical as the lower uterine segment and vagina are more active in their efforts to make the long diameter of the placenta coincide with that of the canal.

Blood may or may not follow the delivery of the placenta as described. When bleeding into the cavity does occur, the shape of the placenta has assumed favors the accumulation of blood behind it.

B. From the less common lateral or marginal rupture in the membranes, we judge the unusual placental implantation in the less active, lower uterine segment. The separation of the placenta so situated is due less to retraction of the placental site and more to forcible detachment in response to pressure from above as more of the lower uterine segment is occupied by the placenta.

The placenta encroaching at all upon the lower uterine segment is influenced directly by the active feature of that segment, namely, the powerful internal os or contraction ring. Here the entire margin is not pressed upon by the contracting walls, as in the location higher up, but the greatest pressure is applied in a line across the maternal surface corresponding to the location of the "ring." As the contraction is increased, the placenta yields in the directions of least resistance, that is above and below, and becomes folded upon itself cylinder-like. In this form, and hugging the uterine walls, the placenta leaves the os, traverses the lower canal which tends to preserve its form, and presents at the vulva by its edge.

Trailing behind and in a line about parallel with the long diameter of the placenta are the membranes, their anatomical relations preserved. Upon the roughened, friable chorion the internal os contracts as the placenta advances. Not uncommonly, as a result of the grasp of the os upon the membranes on the one hand and of the advance of the placenta on the other, there occur stripping of the chorion from the underlying amnion, detachment of the membranes from their anterior insertion, or tearing of pieces of the membranes from the portions already separated from their attachment. Any or all of the foregoing, with or without subsequent retention of them within the internal os and the uterine cavity, may be noted in a single case.

Such possible retention emphasizes the pathological aspect of this mechanism.

More or less of the maternal surface of the placenta appears as the advancing placenta bends under the pull of the membranes which may not have torn.

The cylinder-like placenta more completely unfolds and presents at the vulva by a straighter edge as a smaller placenta is delivered through a more greatly relaxed vaginal outlet.

#### CONCLUSIONS.

1. The placenta is commonly delivered as an inverted cone<sup>1</sup> the fetal surface presenting; the membranes follow, reversed.

2. This may be called the normal mechanism because it occurs in the majority of cases; it may be explained by the action of the uterine forces upon the placenta in its common position in the upper uterine segment, and it is attended by expulsion of the membranes more often intact.

3. Uncommonly the placenta is delivered as a cylinder, the edge or the edge and maternal surface presenting; the membranes follow, their anatomical relations preserved.

4. This may be termed the abnormal mechanism because it occurs in the minority of cases; it may be explained by the action of the uterine forces upon the placenta in its uncommon position in or encroaching upon the lower uterine segment; and it is attended by the expulsion of the membranes often incomplete and detached to a greater or less degree.

4 CHESTNUT STREET.

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#### ECTOPIC GESTATION AT FULL TERM.

BY

GEORGE D. NUTT, M. D.,  
Williamsport, Pa.

THE two following cases which have come under my observation are worthy of report. They were tubal pregnancies at full term with very little departure from normal pregnancy in as far as the mothers' symptoms and feelings were concerned. In each case at the end of the gestation period labor pains were experienced which subsided with the death of the child.

CASE I.—Mrs. N. S. was admitted to the Williamsport Hospital September 29, 1902 and came under my care two days later. I found the following history: Age twenty-five, American, married. Family history negative; had typhoid fever eight years ago, and has suffered from neuralgia. Began to menstruate at eleven

years of age, the flow being very irregular and painful and lasting about six days. She had two children, the last one five years ago. Menstruated about three weeks ago.

*Present Illness.*—About two years ago she began to have pain in the left iliac region for which she went to the Austin Hospital and had some operation, probably a curettement. She felt better for three or four weeks, when the pain returned and she noticed a tumor growing rapidly in the left ovarian region. This increased and she had to take to her bed in April. The mass then diminished in size and she had some edema of the legs. Before the tumor decreased she had severe pains; she now feels weak and has pain down her thighs; is constipated, and has had several attacks of flooding.

*Examination.*—There is a tumor, nodular and hard, with some mobility, lying in her left side, attached to the uterus and having every appearance of a large fibroid of the uterus.

The patient was kept under observation for a week. Her temperature was normal, pulse from seventy to ninety, and respiration thirty.

October 24, opened the abdominal cavity and found a hard, nodular, vascular tumor with some omental attachments. The sigmoid was firmly attached to the side of the tumor and was separated with some difficulty. The tumor pushed the uterus to the right, the left ovarian artery passing directly over the tumor to the uterus. On opening the tumor, I was surprised to find a full-grown, partially macerated child, or, in other words, a broad ligament gestation. The uterus was eroded or digested about one-third, as were also some portions of the child. Removed the sac and uterus, and carefully stitched the peritoneum over the stump.

The patient did well, the temperature never rising above a hundred, and she left the hospital in five weeks. A more connected history was obtained after operation.

She said in June, 1899, she first felt a tumor; her menses had been regular, but she flooded nearly a month; July 12, was curetted. Did not menstruate until April, 1900. On March 8, had severe labor pains, some discharge and then the pain stopped; the tumor grew less and she never felt any motion or sign of fetal life. The case is interesting in that pregnancy had gone to full term, labor pains had come on, lasting several days, then the child died, remaining in the sac two years while nature was trying to destroy it by maceration and absorption without any rise in temperature. The attachment of the sac to the bowel was quite firm, and evidently nature was preparing to expel it in that way.

CASE II was sent to the Williamsport Hospital by Dr. Traux of Watsontown, Pa., who gives the following history:

Mrs. K., aged twenty-three, had one child born four years ago last June, not an easy delivery, having had to use forceps. She had at the time a slight tear which was repaired.

In December, 1908, she had her last menstrual period, morning sickness began about two weeks later and kept up for more than two months. From this time on no unusual symptoms developed, life being felt for the first time about the second week in April.

About the third week in September, 1909, the patient was taken sick, and was apparently in labor, having regular labor pains which lasted for three weeks. During this time she was unable to lie down, was forced to sleep sitting in a chair, and upon the slightest exertion suffered great pain. About five weeks later she began to have another attack of what seemed to be labor pains, but of milder character. At this time many small clots of blood passed; also rather profuse hemorrhage at intervals which kept up for four weeks, after which time the patient began to feel better each day until when I was called to see her the first time, December, 1909, she was up and doing her usual household duties.

Patient claimed she had gone beyond full term, although her former physician had advised her to the contrary.

Diagnosis of extrauterine pregnancy was made and confirmed by Dr. Nutt, and she was admitted to the Williamsport Hospital and operated upon January 4, 1910. The form and shape of the child could be felt and we could trace the uterus pushed to the left.

Entering the abdomen through a long median incision we found a right tubal pregnancy, apparently starting from the very end of the tube and penetrating and growing downward under the peritoneum including the ovary in the wall or sac. Numerous adhesions of the omentum and bowels were encountered. The lower or under half of the uterus was firmly adherent to the sac and muscular fiber radiated from the uterus at least two inches over the sac. The child, which weighed nine pounds, was undergoing maceration.

Hysterectomy had to be done first in order to cut off the blood supply and remove sac. The sac was finally shelled out, except a small portion about the right ovarian artery where it was firmly imbedded deep in the pelvis, this part was brought to the surface and firmly stitched to the peritoneum and drained; the rest of the abdomen was closed. She made a very good recovery and left the hospital in six weeks entirely well, except for a small fistulous tract in the old sac.

FIBROID TUMOR COMPLICATING PREGNANCY AND  
RENDERING A CONTINUANCE OF GESTATION  
DANGEROUS AND NATURAL DELIVERY  
IMPOSSIBLE.\*

BY

B. F. BAER, M. D.,

Professor of Gynecology in the Philadelphia Polyclinic and College for Graduates  
in Medicine,  
Philadelphia, Pa.

(With four illustrations.)

To retell an oft told tale may be trite and uninteresting, but to remain alive and awake, it is necessary to keep constantly drilling and rehearsing, so that the best discipline shall prevail and the best success may be won.

If it goes without saying that it is a misfortune for a woman to have a uterine fibroid, it will be at once admitted that the misfortune becomes greatly multiplied when pregnancy is added as a complication. This becomes especially true when the tumor is situated in the lower uterine segment, and in the posterior wall, or the broad ligament, in the consideration of which this communication is largely concerned.

Early in my medical career, it was my fortune to see two cases of pregnancy complicated with fibroid tumor, in one of which rupture of the uterus occurred during labor, followed by the death of both mother and child; the other where death resulted from septic peritonitis in consequence of injury to the soft parts, following instrumentation for dystocia caused by a blocking fibroid. The child had perished during the labor.

The first case was attended by a midwife. To the other I was related as an assistant.

This dreadful experience impressed upon me the fact that pregnancy complicated with fibroid tumor was a most serious condition; and investigation of the literature of the time soon convinced me that I had only witnessed, in a concentrated form, a disaster that was not uncommon in a period that has passed.

I found, among the latest and best authors of the time, that Barnes and Playfair alike advised women with uterine fibroids not to marry. Barnes wrote: "Happily, in a great number of instances, fibroid tumor or myoma imbedded in the walls of the

\*Read before the American Gynecological Society, May 3 to 5, 1910.

uterus operates as a bar to conception; but when pregnancy does supervene, the result is often disastrous. The tumor interferes with the equable development of the uterus and therefore frequently determines hemorrhage and abortion. And, perhaps, this is a fortunate event; for delivery in the latter months brings additional danger. Looking to future probabilities, we should deprecate incurring the risk of another pregnancy. I believe every experienced obstetrician would advise a single woman known to have fibroid tumors in the uterus to avoid marriage; with the doubtful exception of tumors seated in the fundus."\*

These were wise words, and most sound teaching; and they are as true and applicable to the present time as when they were written, more than thirty years ago. The only advance we have made in the management of these cases is in the protection we have been able to give them, by the operative measures that have been established by the work of the gynecologist, in abdominal surgery. This, of course, has been a great gain, for by it many thousands of lives have been saved; but it has not often given the power to perform safely the function of child-bearing.

Since that time I have been teaching that a married woman or one about to marry and known to have uterine fibroids should be advised as to the dangers, and that if she then desires protection it is our duty to give it, even to supravaginal hysterectomy, if myomectomy does not give promise of safety.

Nature herself recognizes the danger and impropriety of fecundation in the presence of fibroid tumor, as witnessed by the frequent occurrence of sterility, miscarriage, or premature labor. And it was mainly from miscarriage or premature labor that the large mortality occurred in the period before these patients were rescued by abdominal operation. At least four of the six cases here recorded, and probably also the other two, would have perished if such aid had not been given.

Dr. Wilmer Krusen,† in a recent paper, relates two strongly illustrative cases in which the patients were profoundly septic from degenerating fibroids due to traumatism from miscarriage, whose lives were only saved by prompt supravaginal hysterectomy under the most unfavorable conditions.

True, the location of the tumor has much to do with the result; but, at best, a fibroid uterus is not a good breeding nidus;

\* Robert Barnes, M. D., *Obstetric Operations*, London, 1875.

† AMER. JOUR. OBST., March, 1910, p. 460.

for the children that survive the ordeal of labor, or Cesarean section at, or near term, are often so feeble from the circulatory disturbances in the placenta that many of them die in infancy, or early childhood; and this would seem to be in agreement with the law that only the fittest should survive.

According to the statistics of Susserot, Nauss, and Lefour, as quoted by our President, Dr. E. P. Davis, more than 50 per cent. of the mothers and nearly 70 per cent. of the children perish as a result of this complication. The later history of the mothers who escaped death is not recorded, but it is fair to presume that many suffered death later, in consequence of another pregnancy; and the after-history of the children saved would be interesting and useful.

To be, as was the third Richard, "Sent into this breathing world before (its) time, scarce half made up," is a misfortune of immeasurable consequence! Should it be forced upon the unborn, and the race deteriorated thereby? The battle against the odds of life is difficult, even for the strongest.

We should also consider that the mothers who fortunately escape with life are often so broken in health that, to regain it, and immunity from further risk, they must, after all, go to operation.

At the same time, I am aware that occasionally, when the tumors are located in the upper zone, the gestation goes to term, more or less normally; and that safe delivery of a normal child is accomplished. The following "remarkable case" was related at a recent meeting of the New York Obstetrical Society by our distinguished Colleague, Dr. W. Gill Wylie.\*

A doctor's wife, between three and four months pregnant, had been seen by several other doctors and they thought it wise to terminate the pregnancy. Dr. Wylie thought that "if those fibroids had much to do with the uterus, the pregnancy would not have gone so far. There were two or three as big as small lemons and others of less size." He advised watching the patient closely and waiting until near term. He then delivered her of a nine-pound healthy child. "I then treated her to secure rapid involution and advised her to try again. She had a second child about fifteen months afterward. She was then forty-five years of age."

The tumors in this case were small and were evidently rather on the surface than interstitial. They were not located in a

\*AMER. JOUR., OBST., April, 1910.

position where the circulation is much disturbed, as it is in the vast majority of cases.

Therefore, I cannot endorse as wise teaching, the advice he gives in the same discussion, that when, "discovering a woman with fibroids, if she is married, it is the doctor's duty to put that woman in condition so that she can become pregnant and will have a child."

It will at once be seen how directly opposite is this teaching to that expressed in the words which constitute the sentiment of this communication. It is true, my paper relates to blocking fibroids particularly, which are usually located in the lower zone of the posterior wall or within the folds of the broad ligament. This was true in five of the six cases.

Then, who can tell how rapidly the fibroids may grow after impregnation in the most favorably appearing cases? A remarkably rare instance should not be made the precedent.

As long as the clock is going the pendulum will swing from one extreme to the other; and this is necessary to mark the progress of time. But in science, when the pendulum is swung to the extreme degree it does not mark progress. Neither is it best, if it were possible, to take a middle course.

Take the one side or the other, and then by discussion our knowledge will grow by discovery of the truth. The figurative "middle of the road" is like the twilight, in which you can see the object, but cannot distinguish the dog from the wolf or the friend from the foe.

Read carefully the cases appended, and think about this important question.

Fibroid tumor is also a cause of extrauterine pregnancy. My first case of this disease was caused by a small tumor blocking the left Fallopian tube at its junction with the uterine cornu.

Both ante- and postpartum hemorrhages are also dangers to be considered.

*CASE I.—Multiple Fibroid Tumor of the Uterus, Complicating Pregnancy. Hemorrhage and Miscarriage. Myomectomy and Oophorectomy.*

The patient was twenty-seven years of age in January, 1891. Several years previously she began to flow more freely at the menstrual periods, and later had metrorrhagia two or three times a month. A year before she noticed several "lumps" in the lower abdomen. The last menstrual period had occurred in September, and soon after she began to suffer from pelvic distress, rectal and vesical pressure, etc.. Early in January,

expulsive pains and hemorrhage became severe, and for the latter symptoms mainly she sought relief.

Examination of the abdomen revealed a number of tumors, apparently connected with the uterus. Per vaginam, a large, rather hard tumor occupied the hollow of the sacrum. The cervix was almost out of reach of the finger, behind the symphysis of the pubes. The os uteri was patulous and a portion of the fetal membranes presented. The indications seemed clear. Under anesthesia the miscarriage was completed, but with some difficulty, because I could not elevate the pelvic tumor which occupied the posterior wall of the uterus.

The patient made slow progress toward recovery and three weeks later, after abdominal section, I removed three cocoanut-sized tumors from the upper zone. They were more or less pedunculated. The pelvic mass was wedged and there were recent inflammatory deposits around it and the appendages which were considerably enlarged. I considered it safer at that stage of my experience to remove the appendages, leaving the uterus and pelvic tumor. The patient made a stormy recovery; and I resolved that I would try to do better with the next case. Supravaginal hysterectomy should have been done at once, before the miscarriage was completed.

CASE II.—*Supravaginal Hysterectomy for Fibroid Tumor Complicating Pregnancy and Rendering Labor Impossible.*

Mrs. H., aged thirty-seven years, was married in February, 1891. Menstruation had become rather profuse during the preceding two years, but the patient considered herself in good health until five months after her marriage, when she began to experience pelvic pressure symptoms. Her catamenia had been suppressed in June. About September 1, she began to suffer with severe pain in the pelvis, along the course of the sciatic nerves, and with rectal and vesical tenesmus. I saw her on September 28, in consultation with Dr. F. L. Horning and Dr. J. S. Baer, of Camden, N. J. She was extremely anemic and appeared to be in great distress. The abdomen was distended by an irregular tumor which extended above the umbilicus. The tumor mass was larger on the right side and was connected with a pelvic tumor by an hour-glass constriction. The mass on the right side was rather globular and conveyed a boggy, semi-fluctuating sensation, while that in the pelvis was quite firm, apparently solid. Vaginal examination revealed a firm, hard tumor, as large or larger than a child's head. It entirely filled the pelvic cavity and was immovably fixed. The cervix uteri could not at first be found but it was finally located above the transverse ramus of the pubic bone, and almost out of reach of the finger. Combined palpation showed the globular mass on the right side to be continuous with the cervix. There was a well-marked uterine bruit. Diagnosis, fibroid tumor complicating pregnancy and rendering labor impossible.

The great suffering and danger made it imperative that steps

should at once be taken for her relief, and she was transferred to the Polyclinic Hospital.

Operation, October 2, 1891. After anesthesia, I endeavored to dislodge the tumor and elevate it into the abdominal cavity, with the hope that the pregnancy might go to term, but failed, and therefore decided to open the abdomen. Incision exposed the pregnant uterus. The organ was resting on the tumor, being connected with the latter by a pedicle about two inches in diam-



A

FIG. 1.—CASE II. A. Myoma. B. Pregnant sac.

eter. The left broad ligament and the tube and ovary were stretched over the pelvic mass. After great instrumental effort the tumor was released from the pelvis. The propriety of removing the tumor and leaving the pregnant uterus was now considered, but further examination showed that the organ contained several other malignant-looking tumors. I therefore determined upon hysterectomy. The operation was completed by the method and technic described by the writer in the papers read

before the Society in 1892 and 1893.\* She made an uninterrupted recovery, being apparently convalescent from the beginning.

I saw this patient last week, nearly nineteen years after the operation. She has remained in good health. (Fig. 1.)

CASE III.—*Fibroid Tumor Complicating Pregnancy. Hemorrhage and Miscarriage. Supravaginal Hysterectomy.*

Mrs. E. H., æt. thirty-six years. Married, April, 1902. The periods had been rather profuse since marriage until September, when suppression occurred. Soon after, pelvic symptoms, increasing in severity, were present; and about the middle of December metrorrhagia and pain began and continued more or less severe. I saw her in consultation with Dr. J. W. Parsons, of Canton, Pa., December 28.

Examination revealed an irregular, hard mass in the lower abdomen. Per vaginam, the os uteri was found rather patulous, with fetal membranes presenting at the internal os. Temperature was elevated and the pulse rapid. The patient was septic. Miscarriage was inevitable, but it was deemed unwise to try to remove the product through the cervical canal.

She was admitted to my private hospital and supravaginal hysterectomy was performed early in January, 1903. There were several orange-sized tumors, one submucous, but sessile, two interstitial. The uterine cavity contained a four months dead product. The submucous tumor was undergoing gangrenous change. Recovery.

CASE IV.—*Fibroid Tumor in the Posterior Wall of the Uterus, Complicating Pregnancy. Pelvic Incarceration Rendered the Continence of Pregnancy Dangerous and Labor Impossible. Supravaginal Hysterectomy at the Fifth Month.*

Mrs. D., of Virginia, æt. forty years, was married on June 1, 1905, and did not menstruate afterward, although the periods had been regular before. Symptoms of pregnancy were soon present, and in August she began to suffer from pelvic distress. The symptoms gradually increased and a month afterward she was compelled to consult a physician. Examination at this time revealed what was thought to be a retroflexed pregnant uterus; and several attempts were made, twice under anesthesia, at dislodgment of the supposed pregnant uterus from the pelvis. Failure resulted, and the patient was left in a worse condition. At this time, late in October, she was brought to Philadelphia by her former physician, Dr. E. H. Gingrich of Lebanon, Pa., and placed in my care. Dr. Gingrich had made a diagnosis of complicated pregnancy.

She presented a picture of extreme suffering, was emaciated, pale, and jaundiced. There was a sense of fullness and pressure in the pelvis and lower abdomen, which was agonizing. Dyspnea was so marked that she could not occupy the recumbent posture. There were retention of urine and rectal obstruction.

\* Supravaginal Hysterectomy without Ligature of the Cervix, in Operation for Uterine Fibroids. A new method. By. B. F. Baer, M. D., Transactions, American Gynecological Society, 1892 and 1893.

Examination revealed a distended abdomen and a rounded, rather symmetrical tumor, occupying the lower portion. Per vaginam, a hard mass completely filled and blocked the pelvis. Its size, shape, and consistency resembled that of the child's

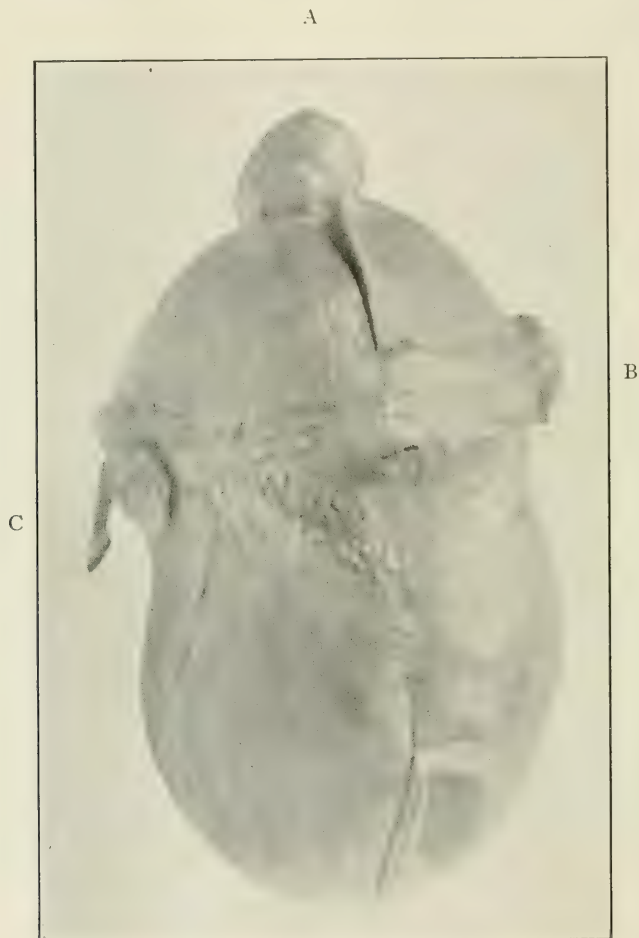


FIG. 2.—CASE IV. A. Head of fetus emerging at point in anterior wall where rupture was imminent. B. Left ovary. C. Right ovary. Between B and C., in the line of division of the tumor, is the internal os uteri. Below this the tumor is constricted by the linea ilio-pectineal.

head at full term. It was immovably fixed. The cervix uteri could not be found, being above the pubic crest. The hypogastric and pelvic tumors seemed to be one mass. The parts were very tender to the touch. Catheterization revealed retention of urine.

The patient was placed in preparation. Rest and emptying the bowels by enema and sulphate of magnesia removed the tympany, so that on the following day the hypogastric tumor could be more easily defined. It extended above the umbilicus and was very tense. The pelvic tumor was still immovably fixed. I now decided upon abdominal section.

An incision was made in the hypogastrium, when the upper tumor was seen to be the pregnant uterus; it was so black from venous stasis as to be apparently dead; the broad ligament veins were especially congested and appeared on the point of bursting; below was the pelvic tumor, wedged in the pelvis. Further examination showed that the tumor occupied the posterior wall of the uterus. Manipulative effort to dislodge the growth from the pelvic cavity entirely failed, and I was compelled to use a large volsella forceps; even then it required many anxious minutes of traction to dislodge it. I finally succeeded in doing so, when the whole mass was delivered through the incision. Supravaginal hysterectomy was then completed.

Examination of the remarkable specimen, as shown in the photograph before you, reveals at once why I decided upon hysterectomy rather than enucleation of the tumor, which I had hoped to do, and thus save the life of the child by preserving the uterus. The specimen shows that this would have been impossible without also sacrificing the life of the mother (Fig. 2). At one place, where the child's head is shown emerging, the uterine wall is on the point of rupturing.

CASE V.—*Pregnancy Complicated with Fibroid and Ovarian Tumor. Supravaginal Hysterectomy.*

A. J., æt. thirty-three years, married, two children, youngest three years; four abortions since; consulted me in September, 1908, for metrorrhagia, expulsive pains and pressure symptoms. Bleeding had been continuous for several weeks.

She stated that she had missed two periods and also that she had had two abdominal sections, one six years, the other six months ago. Why, I did not learn.

Examination showed the pelvis entirely filled with a mass; it seemed to be made up of the enlarged uterus, with a tumor on the left side of it. The os uteri was patulous. Diagnosis, fibroid and tuboovarian tumor with inflammatory fixation, complicating pregnancy. Miscarriage was imminent.

Operation, September 15, 1908. The uterus was found to be larger than at the third month of gestation, crowded a little to the right; the left ovary contained a tumor as large as the fist, all forming one mass, because of inflammatory exudate and adhesions. After the tuboovarian tumor was separated and removed the uterus was found to contain a fibroid tumor.

Supravaginal hysterectomy was performed. Recovery.

Within the uterine cavity a dead product of two months was found. A submucous fibroid tumor, larger than a duck's egg, occupied the posterior wall; it was undergoing gangrenous change.

CASE VI.—*Pregnancy Complicated with Fibroid Tumor in the Lower Zone and Broad Ligament; Blocking the Pelvis and Rendering Natural Labor Impossible. Abdominal Hysterotomy and Hysterectomy at the Seventh Month.*

Mrs. L., æt. forty-one years, was married at twenty-eight, but had not been previously pregnant. She had suffered from dysmenorrhea since puberty. After her marriage she had some kind of local treatment for its relief but with little benefit. Later she was treated for retroflexion of the uterus, and she was "laid up" on several occasions with what was probably pelvic peritonitis. During the previous year she had had metrorrhagia at the menstrual periods. She then received some additional treatment, probably intrauterine. After that she seemed better. In December, 1908, the catamenia were absent and did not reappear. In February, 1909, she was so ill that she was sent to a gynecologist in a neighboring city. He informed her that she had several fibroid tumors, and advised their removal. The abdomen rapidly increased in size, and her sufferings became progressively severe, so that she was almost constantly in the care of her physician. Toward the end of May, she was conscious of such commotion within the abdomen that she informed the doctor she must be pregnant; he very naturally thought it unlikely, because of the long sterility. But he was hurriedly called one night to find the patient "on the point of dying" from what appeared to be heart failure; he then made a physical examination and found a moving child high in the epigastrium, and some hard masses below. He now became convinced that a complicated pregnancy existed. During the next two or three weeks there were several similar attacks, only more severe. Dyspnea also became so marked that she was afraid of the recumbent posture.

I first saw the patient in Philadelphia, June 23. I shall not soon forget the picture of appeal and anxiety and distress, which were expressed upon the countenance and conveyed by the general attitude of this patient, when she entered my office and said, "I must have relief, for my heart does not seem to have room enough to act."

I found that the child was carried almost entirely above the umbilicus, feet upward, and I concluded that the syncope, the dyspnea, the nervousness, and the general distress were probably due to the hammering of the child's feet upon the solar plexus and the diaphragm. The hypogastrium contained numerous hard tumors, one nearly as large as a child's head, low in the right ilium, and dipping into the pelvic brim. Per vaginam, another hard tumor, larger in size, was blocking the pelvis, but more to the left. It appeared to be fixed, as if from old inflammatory adhesions. The cervix uteri could only be located by drawing a little on the imagination. It seemed to be between the two larger tumors, but out of reach. The gestation was estimated at about seven months. The patient was admitted to a private room in the Polyclinic Hospital.

I had hoped to find that the symptoms had been exaggerated by the patient, and that by rest and remedies the gestation might be carried along toward term. But in this I was disappointed. After three days of observation I was persuaded that in the interest of both mother and child operation was necessary. This was done June 27. I was ably assisted by Dr. W. R. Roberts and Dr. R. L. Mitchell.

After the abdominal incision, the fundus of the uterus only

C



B

A

FIG. 3.—CASE VI. Anterior view. A. Pelvic portion of tumor, which was fixed by strong old inflammatory adhesions. B. Broad ligament tumor. C. Body of uterus with many small tumors. Above A umbilical cord is seen issuing from the internal os uteri.

was with difficulty made to emerge, because of fixation below. Without wasting time hysterotomy was at once done, the knife passing around and through a number of small tumors. A feeble, half-cyanosed child was delivered and handed to an assistant for resuscitation. There was very little hemorrhage, as Dr. Roberts was constricting the vessels with his left hand. I did not detach the placenta, for it occurred to me that it was

unnecessary and would only lead to a loss of time; and that the squalor and hemorrhage attending its separation would be a disadvantage. This is a point in the technic which I found of value, and it should be remembered. The next step brought my attention to the pelvic tumors, and showed me that one was situated low, within the broad ligament, with attachment to the side of the uterus, near the cervix. Another was fixed by old inflammatory adhesions, deep within the pelvic cavity. This confirmed the view, previously formed, that natural labor was impossible. Hysterectomy was now completed and the incision closed.



FIG. 4. CASE VI. Posterior view.

The patient stood the operation well and awoke from the anesthesia, happy in the relief obtained, as expressed by both voice and countenance. She made a smooth recovery. The child was feeble at delivery but seemed to thrive for a few days, then gradually declined, and died at the end of two weeks.

The specimen shown in the photograph is a remarkable one, in that all of the larger tumors are in the lower zone, and one of them within the folds of the broad ligament. The upper zone also contained many tumors, but they were smaller (Figs. 3 and 4).

Finally, if the patient is pregnant when first seen we must, of

course, decide from the conditions what should be done to save the child, just as in any other serious disease of the pregnant woman; but the obstetric rule, established long ago, that the mother must be given the preference when both are in jeopardy, remains.

If the tumors occupy the upper zone, or if they are small and subperitoneal, the prospect of saving the child will be greatly improved; and it must be given every chance. At the same time, I believe that impregnation in the fibroid uterus is a danger that should not be encouraged.

2115 CHESTNUT STREET.

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## TREATMENT OF AN ANTEUTERINE PELVIC ABSCESS BY SEQUESTRATION AND DRAINAGE.

BY

HOWARD A. KELLY, M. D.

Baltimore, Md.

(With four illustrations.)

ANTEUTERINE abscesses, that is to say, abscesses situated somewhere between the round ligaments and the uterus behind, and the pubic bones and symphysis in front, and having, therefore, some close relation to the bladder, are among the rarer forms of gynecological infection, and I have only seen a small group of them in a long experience. Such abscesses may rise from one of several sources: the Fallopian tube forming a pyosalpinx may be displaced over in front of the uterus with or without a backward uterine displacement, the abscess may be mural, located in the anterior uterine wall at some point below its cornu, or, again, it may be lodged in the cellular tissues (subperitoneal) between the uterus and the bladder. It is often hard in these cases to define exactly the position of the abscess before the more direct inspection of the structures, as the bimanual examination may only reveal a more or less confused thickening to the right or to the left of the median line. When the abscess is situated more median, and is large and fluctuates, it may then be quite evident to the examiner that it is located between the uterus and the bladder, and his clear surgical instinct may at once suggest that he should proceed to open the anterior vaginal culdesac with a view of draining it there. After opening the abdomen in other cases and detecting the exact location of the abscess, the operator may also then deem it wiser not to open the abscess cavity from above, but, under the guidance of

abdominal inspection and under the control of the fingers in the abdomen, to open the anterior vaginal wall and make the drainage through in this direction. When the abscess is a small one, and when it is well limited, he may deem it perfectly safe to open

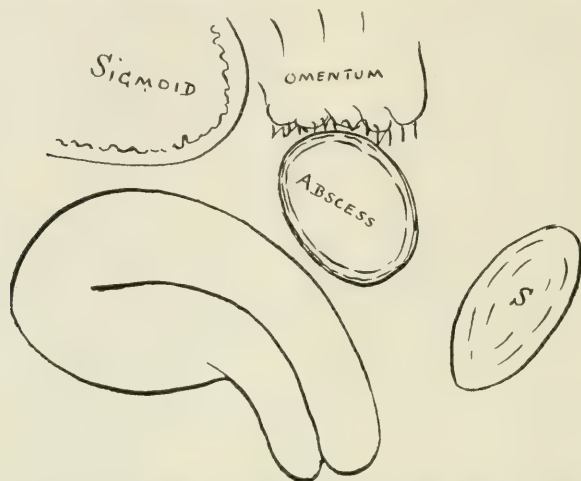


FIG. 1.—Uterus in retrodisplacement. Abscess above with adherent omentum.

it above transperitoneally, perhaps aspirating first, and then, after cleaning out the cavity thoroughly, to proceed to sterilize it by an application of pure carbolic acid followed by absolute alcohol, after which the walls must be curetted out or excised and closed by suture. This plan of treatment is well adapted to the smaller



FIG. 2.—Shows the extent of the abscess in front of the uterus, and on the right side, as seen through the abdominal incision.

abscesses. I had a case last December in which there was a large abscess extending from beyond the median line on the left well over on to the right side, filling out the right anterior quadrant to the pelvis, in which I adopted yet another plan.

The large infected area with its accumulated pus was so located that it could not be reached conveniently from below, so I opened the abdomen, walled off the affected area with gauze, evacuated the abscess, and then drained it from above after marsupializing or shutting off this portion of the abdominal cavity so as to obviate all danger of extension of the infection as a postoperative peritonitis. The patient was a young woman of twenty-eight, brought to me by Dr. Dew of Lynchburg, Va. She had had one child and began in November with irregular bleedings which continued until January, when a dilatation and curettage was done. In January, although the bleeding ceased, she began to have an offensive discharge and signs of septic infection. This continued until I saw her toward the end of

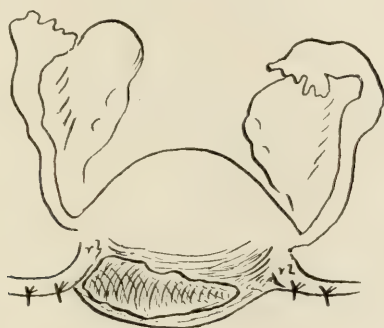


FIG. 3.—The abscess opened and cleaned out. The round ligaments on either side are united to the anterior abdominal wall to the right and to the left of the symphysis. Another stitch drawing each cornu of the uterus forward to the abdominal wall further contracts the pouch in which the abscess lies.

February, 1910; when, finding a well-defined tender mass to the right of a retroflexed uterus, and in view of the septic history, I urged immediate operation.

The abdomen was thoroughly cleansed and the incision made; the omentum which was adherent in front was freed, the uterus was found in retroflexion, and the uterine tubes and the ovaries normal; Douglas' culdesac was patulous. The vermiform appendix was attached to a mass which lay anterior to the uterus and between it and the bladder, more on the right side. A superficially inflamed but otherwise intact appendix was freed and removed after the usual manner. The abdominal cavity was then carefully packed off with gauze on all sides and the abdominal incision protected, when the abscess in front of the

uterus was widely opened from side to side, evacuating 15 or 20 c.c. of pus containing diplococci, not intercellular, which failed to grow on the culture media. After emptying the abscess the walls of the irregular cavity were then curetted. On account of the infiltration of the surrounding tissues I could not be sure that all infection had been eliminated, so I proceeded to shut off (to extraperitonealize as it were) the entire abscess area by suturing the round ligaments with catgut to the anterior abdominal wall, beginning near the internal inguinal ring and coming

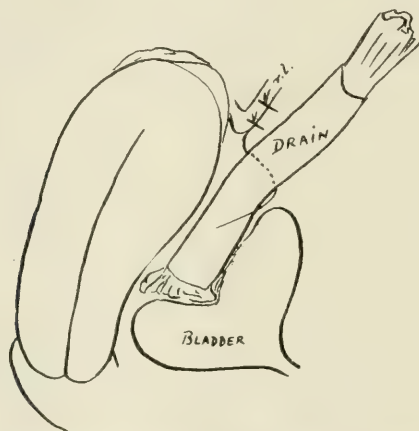


FIG. 4.—The uterus drawn forward by the sutures uniting the round ligaments and the cornua to the anterior abdominal wall, leaving a narrow opening between the uterus and the symphysis through which the iodoform gauze drain enveloped in protective is inserted down into the abscess cavity.

in toward the recti. The cornua of the uterus were also fastened up to the abdominal wall. The body of the uterus itself was not so sutured. This left a little crack between uterine body and abdominal wall through which an iodoform drain, covered with protective, was inserted down into the abscess cavity and leading out down through the lower end of the abdominal incision.

An opening was also made in Douglas' culdesac and a small drain brought out there into the vagina. The abdomen was then closed in layers down to the drain. The dressing was changed on the second day, on the fourth the vaginal drain was taken out, and on the sixth the abdominal drain was removed. There was no elevation of temperature subsequent to operation. The

wound healed perfectly and closed by the first of February. Examination showed the uterus held well in place. By this operation I limited the infection to the point from which it originated and then, as I was unable to remove the sac, which was located in the tissues between the bladder and the uterus, I drew up the uterus, reconstituting the vesical fossa, and proceeded to turn it into a pocket or a culdesac by attaching the round ligaments and the cornua to the abdominal wall above the horizontal pubic rami on either side. This temporary pocket lasts long enough to offer a perfect protection to the peritoneum at large, but is not permanent.

I cannot think of a securer way to handle similar cases.

1418 EUTAW PLACE.

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## VAGINAL CYSTS AND THEIR HISTOLOGY.

BY

GRACE PECKHAM MURRAY, M. D.,

Member of the American Medical Association, New York State Medical Society,  
Academy of Medicine, New York County Medical Society, New York Neu-  
rological Society, Women's Medical Association, Professor Adjunct  
in Women's Diseases, New York Post-Graduate  
School and Hospital, etc.,  
New York.

(With two plates and seventeen illustrations.)

THE rarity of vaginal cysts is conceded by all writers on the subject and coincides with the experience of gynecologists who in private and dispensary practice handle hundreds not to say thousands of cases. The case which is reported in this paper is the only one which has come under my observation. In fact the vagina, considering the traumatisms to which it is subjected, is singularly free from neoplasms of all kinds. I have had only one case of carcinoma of the vagina, by which I mean having its origin in the vagina and confined wholly to its tissues, and can recall only one case of polypus.

The patient was a healthy young Irish woman of thirty. She came to the clinic at the New York Post-Graduate Medical School in the fall of 1907. She returned again in June 3, 1908. She had then been married six years. She had had two children and no miscarriages. Her labors were normal and her oldest child was four years old and the youngest was two years. The tumor troubled her two months before her last child was born. She noticed it a year or two before her marriage, but it had not given her inconvenience, nor was it very large. She menstruated first when she was fourteen, and was always regular except when

nursing her children, menstruation lasting four days. She had no clots nor pain except when she got her feet wet. She felt well when menstruating except for a headache at the base of the brain. She had leucorrhea after her period. She had been constipated since her children were born, but did not need laxatives before. Her urine was normal. Complained of nervousness, but said she drank a great deal of tea.

Upon examination a growth was found presenting at the vulva size of a hen's egg, which resembled a prolapsed uterus or rectocele. It was found to be an elastic tumor with slight fluctuation. It was implanted upon the posterior wall of the vagina, midway between the cervix and the vulva, starting about one inch below the cervix. It had a base about two inches in diameter. The cervix was small and the uterus was retroverted. The uterovesical ligament was shortened. (See Plate I and Fig. 1.)

She entered the service of Dr. James N. West at the Post-Graduate Hospital, and was operated upon by him on July 11, 1908. He made an incision through the mucous membrane over the tumor and the cyst was shelled out. It broke in the attempt. The cavity was obliterated and the wound was closed. The uterus was straightened by means of an Alexander's operation. The patient made an uneventful recovery and was discharged August 15. She presented herself at the clinic early in the following October. The site of the incision could neither be seen nor felt. The uterus was in normal position.

Vaginal tumors offer little of interest except from the standpoint of their origin. This gives them a paramount interest and which, because of their rarity, makes it important that each case should be presented to the profession and its histological appearance noted and studied. The symptoms to which they give rise are singularly lacking in gravity. Not a few may exist without ever disturbing those who have them, or their being aware of their presence, or indeed being perceptible if small upon digital examination. It is not until they attain considerable size or upon becoming pedunculated and appear at the vulva that they are noticed, or when they have become large enough to interfere with coition or labor that the patients seek advice.

The matter of diagnosis is simple. In only one instance could a mistake have serious import. One should be careful to differentiate between them and a hernia into the vagina, records of such cases having been given. Although such an occurrence



Vaginal Cyst Presenting at Vulva.—PECKHAM MURRAY.



is of great rarity, tumors originating from the ureter may also be taken for vaginal.

The vaginal cysts are not important from a surgical point of view. They are easily extirpated and healing takes place readily as seen in this case just reported which in a little more than two months after the operation left not a trace of its ever having

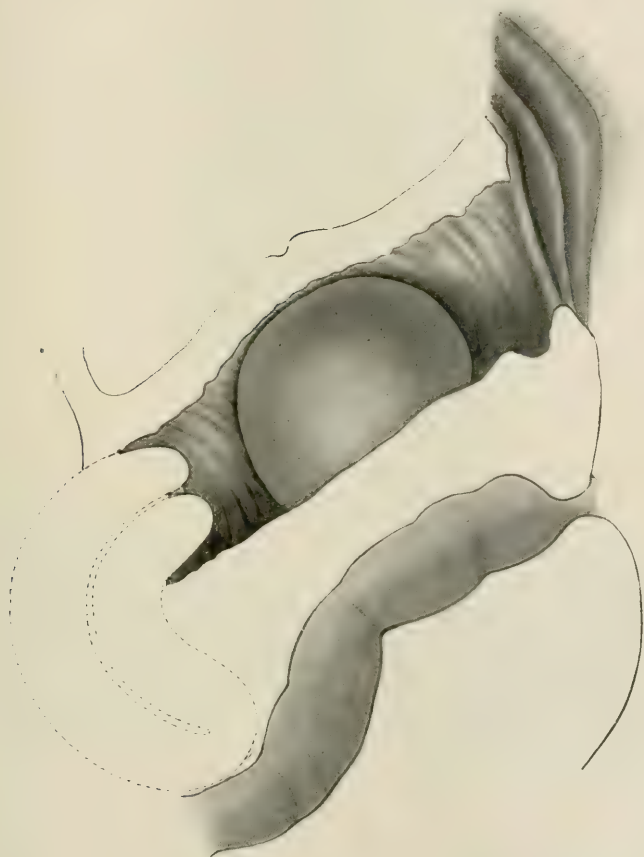


FIG. 1.—Schematic representation of tumor *in situ*.

existed. The same thing occurs often when the cysts are simply opened and the contents evacuated. When the tumor is situated on the anterior wall, care has to be taken not to injure the ureters or the bladder.

The location of the cysts may be either on the anterior or posterior wall as well as lateral. Burrier de la Roche in his

Thèse de Paris says that those on the anterior wall predominate. They are generally solitary. They may be multilocular, but as a usual thing they are unilocular. They are ovoid in form or globular.



FIG. 2.—Section from middle of posterior wall of vagina of a girl sixteen years old.

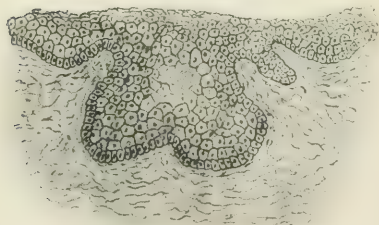


FIG. 3.

FIG. 3.—Section from lower third of posterior wall of vagina of child twenty-two days old. (Sharp border toward connective tissue made of cylindrical epithelium. Inner portion pavement epithelium.)

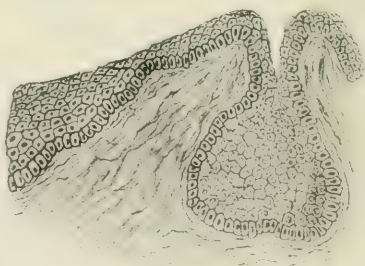


FIG. 4.

FIG. 4.—Shows a closed crypt with a lumen in the middle. (Veit.)

Rutherford gives the following table:

	Anterior wall.	Posterior wall.	Lateral.
Graefe.....	29	21	11
Winckel.....	19	14	14
Johnston.....	60	57	18
Rutherford (collected by)	25	15	4

Burrier de la Roche believes the anterior wall is more frequently affected because of its proximity to the ureters (the remains of the Wolffian bodies). Takahasi and Lee consider the anterior and posterior walls equally affected. Von Preussen and Froment think the posterior walls are equally affected. All authorities agree that they are rare upon the lateral walls.

The growth of the cysts is said by all observers to be very



FIG. 5.—A. crypt lined throughout with flattened epithelium. B. Connective tissue. C. Muscular tissue. D. Low columnar nonciliated epithelium lining interior of cyst wall. (Rutherford.)

slow. In the case reported there had been no change in six months. That it is influenced by pregnancy would be expected, as is shown in this instance. Excessive coitus will also cause them to grow. Winckel states that they grow very slowly, requiring many years to become the size of a hen's egg. Furst records one which took five years to grow, and Tillaux tells of one that was under observation for twenty-two years.

They are covered with the mucous membrane of the vagina.

If this were thick, they might remain for years in the same condition, but if it were thin, or the contents of the sac pressed upon the membrane, it would be gradually thinned and a spontaneous rupture take place, the fluid passing off through the vagina, and sometimes through the ureter, when the growth is situated upon the anterior wall. Sometimes they will suppurate. Hellier reports two such cases. Evacuating their contents and

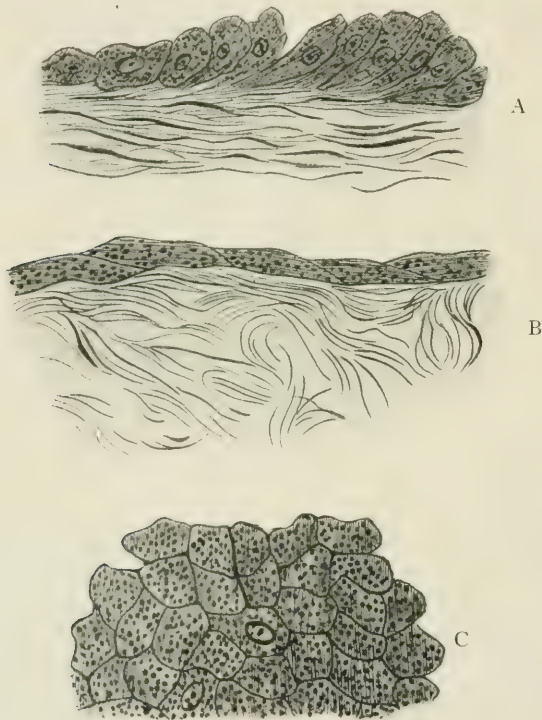


FIG. 6.—A, B, C. Different forms of epithelial cells lining the interior of cyst. (Rutherford, after Lebedeff and Johnston.)

packing them they healed completely. When rupturing spontaneously they may disappear, or they may refill again or leave a fistulous opening.

The cysts are filled with a fluid which varies in consistency and color. Usually it is pale or straw color, but it may be deeper, even to the color of prune juice. One would expect that the examination of the fluid contents would assist in solving the origin, but all writers agree that the fluid contents of the cysts are without significance in this respect.

Since Henning wrote of vaginal cysts in 1830 to the present time, there has been so much confusion and such varied and complex views that the discussion of the theories offers a tangled maze from which it is not only difficult but impossible to draw precise and well-defined views. The able writers on the subject have come to decisions, which are diametrically opposed one to the other and all of which are maintained with great zeal. The cysts have been described as traumatic in origin. It has been asserted that they could arise in no other way; that is,

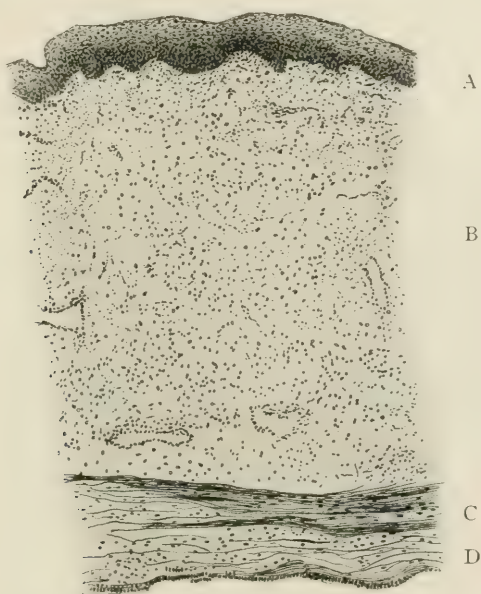


FIG. 7.—Section through cyst wall. A. Epithelium lining vaginal surface. B. Connective tissue. C. Muscular tissue. D. Epithelium lining interior of cyst. (Rutherford.)

that they resulted from coitus or from injury at parturition. They have been described as superficial or deep according to their origin. They have been classified as tumors arising from extravasation of blood, of serous fluid, as arising in folds of connective tissue which have become agglutinated, or from the lymphatics of the vagina, and lastly and most important as developing from the histological elements of the vaginal tissues. It has been thought that the vaginal membrane was incapable of producing the large cysts which we have under consideration, that any tumor attaining the size of a small

orange must have taken its origin from some structure outside the vagina. The oldest writers with Huguier at the head thought the cysts were retention cysts arising from the obstructed glands of the vagina. Then when histologists of note failed to find glands in the vagina, but discovered that in the place of glands depressions occurred in the surface forming crypts which were lined with epithelium, that the cysts took their origin from these crypts whose mouths had become occluded, and hence the cysts were retention cysts, but not of glandular origin. When, in 1877, Freund advanced the theory that these cysts



FIG. 8.—Section of wall of cyst. Showing (ec.) cylindrical epithelium in glandular formed diverticulæ and continuing in pavement epithelium (ep.). (Francoz et Verlhac.)

were of embryonic origin, and came from the remains of fetal structures, many able writers on the subject from that time to this regard the problem as solved and that further discussion was unnecessary, while others thought that some had their origin in these "rest" or "remainders," but not all were thus formed.

The prominent question which arises is "Has the vagina glands?" It seems, indeed, strange that such a question could be held for so long in such dispute. The text-books of the day on histology dismiss the subject with a very few words. "True glands are not found in the vagina. The watery acid secretion is the product of the general mucosa." Stohler says, "According to most authors the vagina contains no glands; mucous secre-

tion is derived from the cervix uteri." It was Veith, in 1889, when he published his article on Vaginal Epithelium and Vaginal Glands, who undertook to establish the fact that the vagina in the ordinary sense of the term was without glands. He set himself



FIG. 9.—(Högström) Fluctuating swelling size of fist, attached a finger's breadth from vaginal opening on anterior wall. The tissue had become hard like skin. Emptying the bladder made no difference in size. Uterus was retroverted. It contained a yellow odorless fluid. It was extirpated.

The figure shows a cut through the cyst wall near site of amputation. Outer pavement epithelium with basal standing cylindrical epithelium. a. Mucous membrane of vagina. b. Smooth musc. of wall. c. Epithelium of inner side.

to work to refute Von Preuschen. He reviewed the state of the question of vaginal cysts as he had to encounter it. Henning had said cysts were obliterated lacunæ. Hugier had his theory that there were deep and superficial glands, especially in the middle

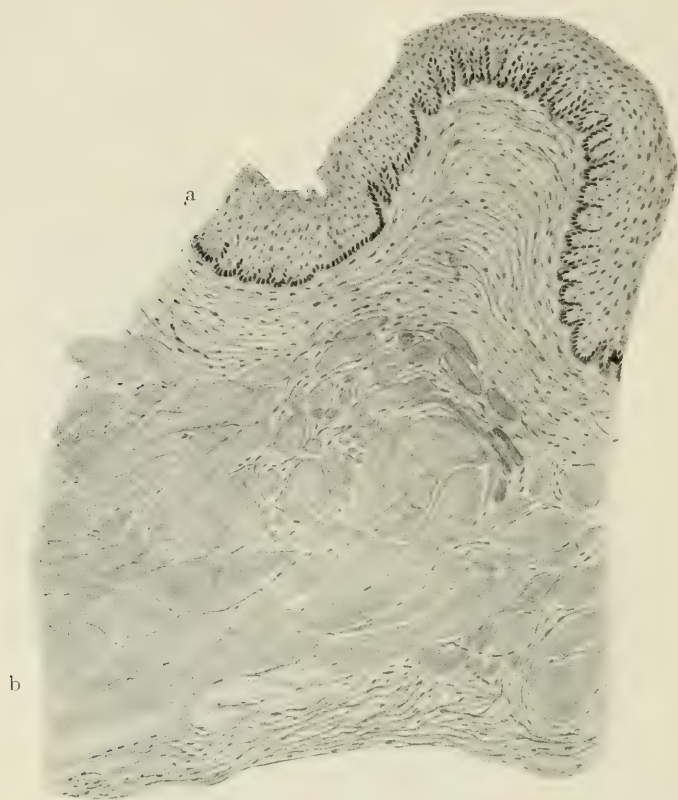


FIG. 10.

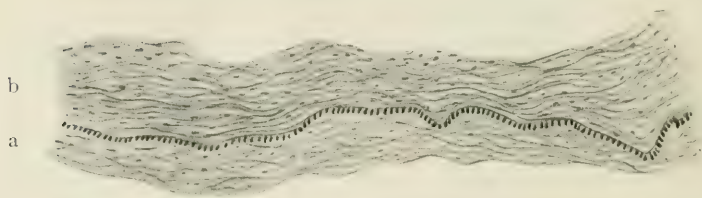


FIG. 11.

(Högström) Fluctuating tumor size of child's head, bluish-red in color. Covered with vaginal mucous membrane. Woman was pregnant and when child was born the tumor was pushed out, after birth it was returned. Uterus was retroverted. A month after confinement the cyst was shelled out.

FIG. 10.—Cut of cyst wall toward the vagina. a. Mucous membrane of vagina hardened like skin. b. Smooth muscle tissue.

FIG. 11.—a. Epithelium on inner side of cyst wall. b. The connective tissue and papillae under it.

and upper part of the vagina, which give rise to retention cysts. Luschka thought that the vagina was very poor in glands, yet they were never wholly absent, but were small and scattered irregularly, especially in the fornix and both sides of the entrance. Hyrtle conceded only a few simple mucous glands. Heule said, "There were no true glands, but sometimes groups similar to solitary follicles of the intestines." Robin, Taylor, Smith, Mandl, Rokistansky, Langer, and Klebs could find no traces of actual or true glands. Lowenstein, Litzman, Holstein, Birsch-Hirschfeld, and Toldt found no secreting (secernirender) glands, but follicles sometimes in greater and sometimes in smaller numbers, while Eppinger, Eustache, and Ruge in their experiments found neither glands nor follicles. So much more surprising then are the reports of Von Preuschen in his work on *Ueber die Cystenbildung der Vagina*, that the vagina possessed glands, and that vaginal cysts of a large size should be regarded as retention cysts arising from such glands. He found the most in the upper third of the vagina. Von Preuschen had a large following, among whom were Zweifel, Kleinwachter, and Lebedeff. But Winkel, Kaltenbach, Schroeder, Spiegelberg, Chiari, Ruge, and others thought that this etiology was not to be accepted. In view of this conflict of opinion, Veith made experiments on thirty different subjects ranging from the age of twenty-two days to seventy-eight years old. He took numerous cuttings in different parts of the vagina. He found the crypts in the vagina lined with epithelium and in only one case, a woman fifty-five years old, did he find anything resembling glands; these were formed of a cluster of cells having a duct. He announced his conclusions that the vagina was normally glandless, that in a few cases glands in the fornix and neighborhood of the introitus were to be found, that such were abnormal, accessory, or aberrant from the cervical glands, or from the Bartholini or vulva glands. (Veith took six pieces from six different parts of the anterior, posterior, and lateral walls of the vagina in the upper, middle, and lower portions.)

Cristalli published, in 1906, the ablest article which has yet been written upon this subject and proved his conclusions by microscopical illustrations. It is entitled *Contributions to the Anatomical and Critical Study of the Cysts of the Vagina*. He bases his observations on four cases of cysts which he had. He speaks of the discordant views of histologists, and announces his conclusions.



FIG. 12.



FIG. 13.



FIG. 14.

(Cristalli) Woman fifty years old. Tumor size of a seven months' fetus attached to the anterior wall of the vagina.

FIG. 12.—Section showing (a) gland cut obliquely. b. Showing gland in its full length. Stratified epithelium of the duct followed by progressive modification toward the end, an epithelium more or less polygonal or cubical in which are elements whose contents react like mucus.

Obs. II.—Patient twenty-two years old. Tumor was size of small pullet's egg, situated in the middle third of the posterior wall.

FIG. 13.—Section showing the mouth of the gland closed. Reaction similar to that of Fig. 12.

FIG. 14.—Showing cells in the deep layer of the mucosa.

*First.*—Contrary to the almost general opinion that the vagina is deprived of glands, it has been possible to find, as Von Preuschen has demonstrated, glands which have a simple epithelium of a more or less cubical form developing to cylindrical with

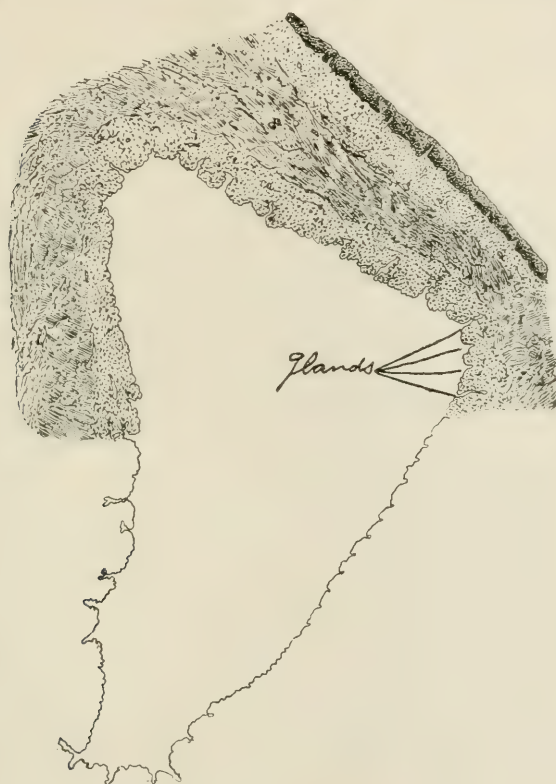


FIG. 15.—Specimen from cyst of anterior wall of vagina, 8 x 5 cm. in diameter. Covered on the external surface by smooth vaginal mucosa. It protruded from the vagina. It was egg-shape. It was densely adherent to structures above the vaginal vault. Cyst cavity was lined with a single layer of high cylindrical epithelium, a true prototype of that found in the cervix. In places are inlets lined with the same variety of epithelium as cyst surface, closely resembling true glands, sometimes dipping down into walls of cyst a cm. or more. Next layer is of connective tissue, and next to this nonstriped muscular fiber. On one portion of outer surface a layer of normal stratified squamous epithelium. (Stokes.)

vibratil cilia, secreting a substance similar to mucine and of a special color. (The illustrations shown demonstrate the location of the glands and a series is made of higher power showing the cells in their position and demonstrating the truth of his description.)

*Second.*—This gland can become the matrix of a vaginal cyst by retention.

*Third.*—This conclusion is supported by rigorous anatomical research and vigorous criticism of all the facts which have come under observation.

*Fourth.*—It is necessary to recognize however in the actual state of our knowledge, we cannot fix permanently the character

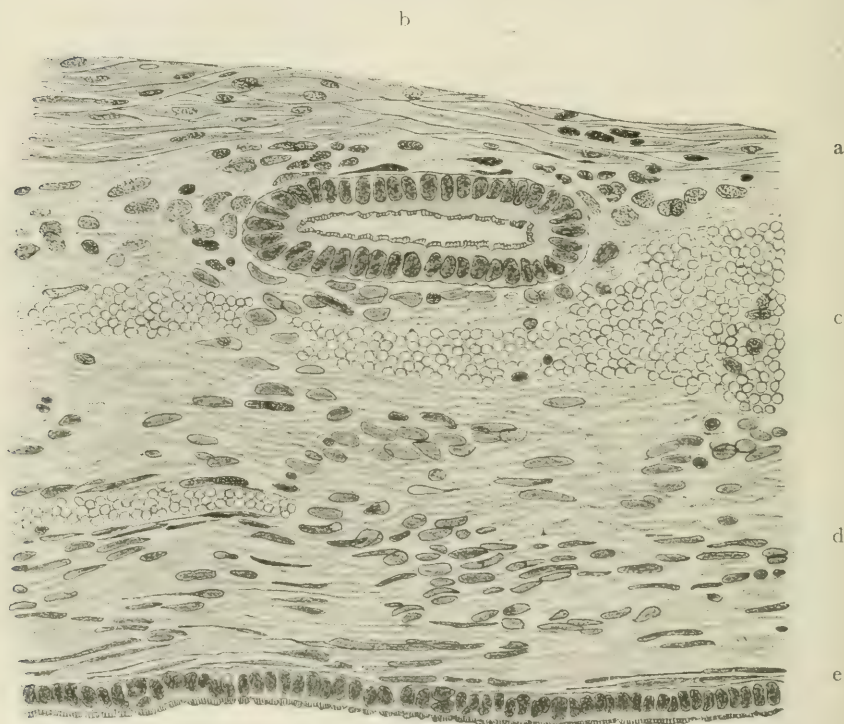


FIG. 16.—Cyst of anterior wall of vagina just to the right of and posterior to the urethral orifice. a. Connective tissue in wall of cyst containing a small gland, b. c. Blood lying in stroma, d. e. Cylindrical epithelium lining cyst cavity. (Stokes.)

of the anatomicroscopic differentiation of the diverse cysts of the vagina. We are able to divide them into three types according to the nature of the epithelium which invests them.

a. Cysts invested with simple epithelium.

In general, we are able to say that the cysts of seromucous type have a double origin—glandular and Wolffian—possessing the original elements of the Wolffian ducts. Possessing the original elements of the Malpighian-Gärtner ducts, they are able to

assume a secretory function. This, however, will not form a basis for a differential diagnosis. The topography, the configuration of the cysts, the kind of structure of the walls, etc., must be taken into consideration to decide their genesis.

b. Cysts with stratified epithelium.

The cysts of the Malpighian type (more frequently retention) are from the vaginal epithelium of Müllerian origin, isolated from the normal position, or of embryological origin, or formed by mechanical action. From this epithelium it is possible to derive true glands of a mucoserous type.

c. Cysts at the same time having simple and stratified pavement epithelium.

The cysts which have simple and pavement epithelium directly continuous with the normal epithelium of the vagina, presenting the duct lined with squamous epithelium which is directly continuous with the normal epithelium of the vagina, the same lining the occluded gland. The transformation of the flat stratified epithelium into cylindrical epithelium, or the substitution of this for the other, has need of the most careful demonstration.

*Fifth.*—The study of the cysts of the vagina will improve and complete histochemical and the histographical knowledge now so obscure. It will secure new data for a histogenetic diagnosis and will offer opinions which will substitute facts for mere hypotheses.

It is this very point of how the flat epithelium of the vagina can be changed into a cylindrical secreting epithelium which has been the stumbling block in the way of accepting a purely vaginal origin for these cysts. It was this which led to the adoption of the theories that they were developed from embryonic remains. Klein states that the excretory canals of the Wolffian body paved with cylindrical epithelium can persist in the adult. He says, "In spite of their great rarity it has been established that the débris of the Wolffian ducts can be found the whole length of the vaginal wall, persisting as far as the hymen." According to Kössmann, they are sometimes in the anterior walls and sometimes in the lateral walls. According to Doran, these vestiges are seated deep in the submucous conjunctive tissue; according to Rieder, in the muscular layer. It seems most plausible that these growths could come from the remains of the structures of Wolff, Müller and Gärtner, and they are to the vagina what the dermoid cysts are to the ovary.



FIG. 17.—Cyst one centimeter in diameter from lateral wall. a. Normal stratified squamous epithelium forming outer layer of cyst wall. b. Sebaceous glands. c. Spindle-shaped connective tissue cells running parallel to cyst wall. d. Inner surface of cyst.

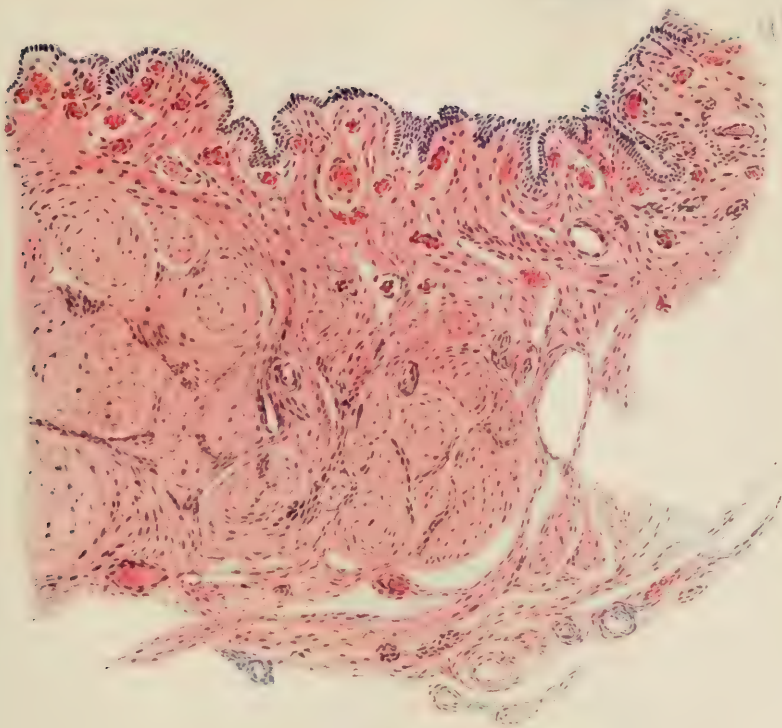


FIG. 1.

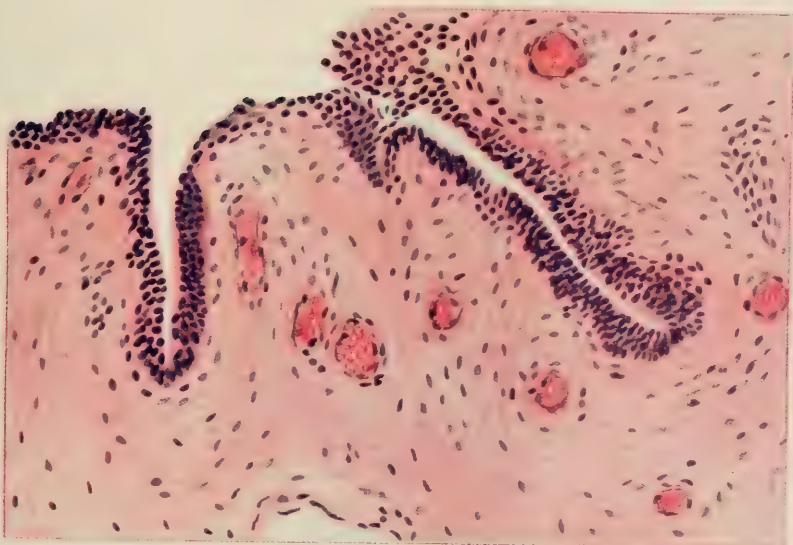


FIG. 2.

Microscopic Appearance of Cyst Wall.—PECKHAM MURRAY.

FIG. 1.—Showing connective tissue with fibers in longitudinal arrangement near the inner surface, while the middle and outer portions consist of connective tissue in transverse section and smooth muscle, respectively. Lying beneath the inner surface are numerous blood-vessels, many of which have thickened walls, usually gorged with blood. The inner surface is covered with a layer of stratified cells resembling squamous epithelium. Occasionally there are crypt-like depressions resembling glands.

FIG. 2.—Enlargement of a portion of the section, showing the crypts and blood-vessels



An examination of the histological specimens culled from the different published reports shows a singular similarity of appearance which would lead one to believe that they have a common origin. It was with the purpose of making this comparison that I have brought together the principal illustrations to be found in the literature of the last thirty years.

The following is the pathological and histological report given by Dr. T. Homer Coffin of the Pathological Laboratory of the New York Post-Graduate School and Hospital to whom I am indebted:

"The specimen marked 'vaginal cyst' consists of a cyst wall averaging 2 mm. in thickness. The inner surface is smooth, resembling a mucous surface, while the outer surface is rough and apparently torn. The cut surface is of fibrous appearance, of concentric layers.

"Microscopically the tissue is made up of connective tissue for the most part, the fibers being in longitudinal arrangement near the inner surface, while the middle and outer portions consist of connective tissue in transverse section and smooth muscle respectively. Lying beneath the inner surface are numerous blood-vessels, many of which have thickened walls, usually engorged with blood. The inner surface of the cyst wall is covered with stratified epithelium, a layer of stratified cells resembling squamous epithelium. Occasionally there are crypt-like depressions in this surface resembling glandular arrangement. The cell nuclei are rich in chromatin material, and here and there are numerous mitotic figures. The cellular layer of the inner surface is arranged in papillæ like a squamous epithelial surface.

"The outer surface of the cyst wall shows a ragged contour, there being no epithelial structures. There is a moderate round-cell infiltration throughout the section." (See Plate II.)

In comparing the sections made from this specimen with those of others the marked peculiarity are the numerous blood-vessels with thickened walls, which are not seen in the others. They all have the same layers, first the normal vaginal squamous epithelium, not seen in my specimen because the tumor was removed by shelling it out, next the connective-tissue fibers, then the layer of smooth muscular fiber, and then the epithelial lining of the cyst, showing in the different specimens the crypts. The similarity between the structure of the cysts and that of the normal vagina is very striking. The law of Müller is brought

to mind, namely: "Every tumor is formed from a tissue having its analogue in the normal organism, be it in the embryonic state, or that of complete development." When it is seen how close is the resemblance between the normal vaginal tissue and the cyst tissue one would naturally arrive at the conclusion that such tumors were developed from that membrane and from no other. The researches of Cristalli would go to prove that glands were sometimes present in the vagina and that these cysts could be developed from them. The presence of the crypts are so universally seen in the specimens that it is easier to accept the idea that the cysts are most often formed from these, a theory supported by the fact that they can very easily become occluded. Then arises the question, Can the epithelium be changed by this occlusion into a secreting epithelium? When, based upon a wide clinical experience, one recognizes the fact that every part and structure of the body, every organ and tissue can offer unexpected abnormalities, it is easy to believe that these cysts can arise from glands, from crypts, and from embryonic remains, nevertheless the conclusion is forced by the study of this case and by its comparison with those in literature whose pictures are given that the majority arise from the vagina itself and are retention cysts.

## BIBLIOGRAPHY.

Augé. Kystes Profonds des Vagin. *Jour. de Méd. de Paris*, 1888, p. 623.

Bailey, F. P. Text-book of Histology, p. 311, 1906.

Baumgarten. Ueber Vaginalcysten. *Arch. f. Path. Anat.*, Band cvii, S. 528, 1887.

Berard. Kystes Vesico-vaginal. *Gaz. Méd. de Paris*, p. 380, 1835.

Bjorkenheim, E. A. Zur Kenntniss des Epithelium im utero-vaginal Kanal des Weibes. *Anat. Anzeiger*, Bd. xxviii, 1906.

Boldt, H. J. Beitrag zur Kystes der normalen gebärmutter Schleimhaut. *Deutsches Wochenscf.*, Bd. xvi, S. 803, 1890.

*Ibid.* Vaginal Cysts. *Med. Brief*, April, 1904.

Bonnet et Petit. *Traité Pratique de Gyn.*, p. 380.

Chiercini. Cisti della Vagina. *Ann. di Ostet.*, vol., xi, p. 310, 1890.

Coblentz, H. Embryological Origin of Ovarian, Uterine, and Vaginal Cysts. *Lond. Med. Record*, vol. x, p. 81, 1882.

*Ibid.* Zur Genese und Entwicklung von Kystoma im Bereich der innern weiblichen Sexual-organe. *Virchow's Archiv.*, Bd. lxxxii.

Cristalli, G. Contributo allo Studio anatomica e critico della

Cisti vaginali. *Arch. di ostet. e ginec.*, Nopoli, vol. xiii, pp. 607, 630, 641, 1906.

De Beule, F. Une Kyste Volumineux du Vagin. *J. de Chir. et ann. soc. Belge de chir.*, Brux., T. vii, p. 124, 1907.

*J. Med. de Brux.*, vol. xii, p. 183, 1907.

De La Roche, F. B. Contribution à l'étude des tumeurs fibreuse du vagin. Thèse de Paris, 1907.

De Sinety. Kystes du vagin. Manuel pratique de gynec., p. 164, Paris, 1879.

Dohrn. Ueber die Gärtnerschen Kanäle beim Weibe. *Arch. f. Gynäk.*, Bd. xxi, S. 328, 1883.

Eppinger, H. Beiträge zur pathologischen Anatomie der menschlichen Vagina. *Zeitschrift. Heilkunde*, Bd. i, S. 369, 1880.

Eustache. Mémoires sur les Kystes du Vagin. *Tocol. de Paris*, T. v, p. 191, 1878.

Ferroni, E. Note Embiologica ed Anatomische sull utero Fetale. *Annal. di Ostericia*, p. 631, 1902.

Fishel. Beiträge zur pathologischen Histologie der weiblichen Genitalien, *Arch. f. Gynäk.*, Bd. xxiv, S. 119, 1884.

Freund. Hamatkolpos Blatt Cyst der Vagina. *Zeitschrift. f. Geburtshlf. und Gynäk.*, Bd. xvi, S. 36, 1877.

Froment. Etude sur les Kystes du vagin. Thèse de Paris, 1870.

Furst, L. Vorgefallene Scheiden Cyste. *Arch. f. Gynäk.*, Bd. xxvii, S. 110, 1886.

Hellier, J. B. Suppurating Vaginal Cysts. *Brit. Med. Jour.*, vol. xlvii, ii, p. 70, 1907.

Henning, O. Katarrh der innern weibliche Geschlechtsteile. *Arch. f. Gynäk.*, Bd. xii, S. 483; *Med. and Surg. Jour.*, vol. xxxv, p. 82, 1831.

Heymann. Ein Fall von vereiterter vaginal Cysts. *Centralblt. f. Gynäk.*, Bd. xxxi, S. 147, 1907.

Holstein. *Lehrb. d. Anat.*, S. 421, 1852.

Högestrom, Th. Zwei Fälle von Cysten der Vagina. *Virch. Arch.*, Bd. clxxxvii, S. 47, 1906.

Hugier. Mémoires de la traité de Chir. de Paris, T. i, p. 326, 1849; Kystes muqueux folliculaires des parois du vagin.

Johnston. Cysts of the Vagina. *AMER. JOUR. OBST.*, vol. xx, p. 1121, 1887.

Kelley, H. *Gynecology*, vol. i, p. 244.

Klebs. Cysten Bildung in der Vagin. *Handb. der patholog. Anat.*, S. 964, 1876.

Kleinwachter. Die Bindegewebigen und myomatosen Neubildung der Vagina. *Zeitschrift f. Heilk.*, Bd. iii, S. 335, 1882.

Kossmann. Zur Pathologie der Parovarium. *Centrbll. f. Gynäk.*, No. 28, S. 685.

Ladreit de la Charière. Sur les kystes qui se developpent sur des parois du vagin. *Arch. gén. de Méd.*, T. ci, p. 528, 1858.

Lushka. Anatomie des menschlichen Beckens. S. 387, 1864.

Machenhauer. Myome Vaginal. *Centralbl. f. Gynäk.*, No. 21, S. 549, 1902.

Mann. Vaginal Cysts. Am. Syst. Gyn. and Obst., vol. ii, p. 56.

Marion, M. G. Les Kystes du vagin. Gaz. des Hôp., Feb., 1902, p. 167.

Neugebauer. Beobachtungen von vaginal Cysten. *Monatsch. f. Geb. u. Gyn.*, S. 679, 1893.

Pestalozza. Delle Cisti della Vagina. *Rivista Clin. de Bologna*, p. 161, 1887.

Pick. *Arch. f. Gynäk.*, Bd. lvii, S. 461, 1899.

Piersol. Trans. Normal Histology, 1895.

Popinel, G. Des Kystes du vagin. *Rev. de chir.*, T. ix, p. 553, 1889.

Rollins, M. Les tumeurs solides et primitives du vagin. Thèse de Paris, 1905.

Routh. Association of Parovarian and Vaginal Cysts. Trans. Obst. Soc. of Lond., 1904, p. 168.

Rutherford. Cysts of the Vagina, etc. Trans. Obst. Soc. of Lond., Vol. xxxiii, p. 354, 1891.

Schroeder. Die Operation der Scheidencysten. *Zeitschrift. f. Geburtshlf.*, Bd. iii, S. 424, 1878.

Smith, R. S. Fibromyomatous Tumors of the Vagina. AMER. JOUR. OBST., 1902.

Stokes, J. E. Etiology and Structure of Vaginal Cysts. Johns Hopkins' Reports, 1898-1899, p. 103.

Stohr, P. Trans. Text-book of Histology, p. 368, 1902.

Takahasi. Untersuchungen über die Entstehung der Cysten der Scheide. *Deutsche med. Wochenschrift.*, S. 453, Juni 7, 1888.

Veit, J. Cysten der Scheide. *Handbuch der Gynäk.*, Bd. i, S. 335, 1897.

Veith. Vaginal Epithelium und vaginal Drüsen. *Virchow Arch.*, Bd. cxvii, S. 171, 1889.

Verliac, L. F. Kyste volumineux du Vagin. *La Gynéc.*, T. ii, p. 223, 1906.

Von Preuschen. Ueber Cystenbilden in der Vagina. *Virch. Arch.*, Bd. lxx, S. 116.

Watts. Cyst of Anterior Vaginal Wall. AMER. JOUR. OBST., vol. xiv, p. 848.

Williams, R. Vaginal Tumors, Lond., 1904.

Winkle. Ueber die Cysten der Scheide. *Arch. f. Gynäk.*, Bd. ii, S. 383, 1871.

*Ibid.* Diseases of Women, Trans., p. 146, 1887.

50 WEST FORTY-FIFTH STREET.

## TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

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*Thirty-fifth Annual Meeting, held in Washington, D. C.,  
May 3, 4, and 5, 1910.*

The Society convened in the George Washington University, and was called to order at 10 A. M. by the President, DR. EDWARD P. DAVIS, of Philadelphia.

An address of welcome was delivered by DR. I. S. STONE, of Washington, D. C., which was responded to by Dr. SETH C. GORDON, of Portland, Maine, after which the reading of papers was proceeded with.

### PRIMARY CARCINOMA OF THE FEMALE URETHRA; HEMATOMA OF THE BROAD LIGAMENT RECURRING WITH PREGNANCY; FIBROID TUMOR OF THE OVARIAN LIGAMENT.

DR. WALTER P. MANTON, of Detroit, Michigan, reported three unusual cases in great detail. He said that primary carcinoma of the female urethra was among the rarest of malignant manifestations. A careful search of the literature up to 1910 gave the reports of but thirty-five cases, including his own, of primary cancer of the female urethra. A careful search of the literature failed to reveal the report of a similar case of hematoma of the broad ligament recurring with pregnancy. Regarding the case of fibroid tumor of the ovarian ligament, the only reference to the occurrence of fibroids of the ovarian ligament which he had been able to find were the two cases reported by Doran in 1896. In both of these cystic cavities existed.

### DISCUSSION.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, said he had had two cases of this rare affection, one of which he had previously reported. A woman was operated on by him four or five years ago for a carcinoma of the meatus which had extended up into the urethra about half an inch. He removed it so radically that incontinence followed, with subsequent prolapse of the bladder mucosa through the remainder of the urethra. The woman complained of this, so he sewed up the opening and made one from the bladder into the vagina. She still complained of incontinence. He then did a colpocleisis, making an opening into the rectum. He reported this case at a meeting of the American Medical Association, but did so again now in order to

give the subsequent history of the case. The woman had passed her urine through the rectum ever since, and to-day she was as well and contented as a woman could be in that condition. He examined the urine two and a half years ago and at that time she had not had ascending pyelonephritis. This was interesting because it had been contended that where this communication was established with the rectum, pyelonephritis would sooner or later take place where the ureters were implanted into the rectum.

The second case of primary carcinoma of the urethra happened a short time ago, although it looked like a urethral caruncle. Microscopic examination showed it to be primary carcinoma. In this case he removed about one-third of the urethra, and there had not been any recurrence of the condition for two years.

DR. CLEMENT CLEVELAND, New York, had had two cases of primary cancer of the meatus, on one of which he did a radical operation, but the disease returned. In the second case he resorted to the use of the actual cautery. He believed this treatment would afford permanent relief of such a condition when surgery was of very little value.

With regard to the use of radium, he had seen such excellent and positive results from its use in the hands of Dr. Abbe, of New York, not only in cases of cancer of the vagina, the fascia, the lip, gum, nose, and ear, that he thought its application to cancer of the urethra would be of great value. He felt very positive that if radium was used in such cases we would see as good results in cancer of the urethra as we would in cases of cancer of the lip, nose, or the ear.

DR. J. RIDDLE GOFFE, of New York, asked Dr. Peterson whether he had used the cautery in the removal of these growths.

DR. PETERSON replied that he had not.

DR. GOFFE, in resuming, said he recalled one remarkable case of malignant urethral caruncle or primary carcinoma of the urethra a number of years ago. The woman gave a history of having been operated on by Dr. William T. Lusk six years previously. Dr. Lusk told her at the time she had cancer that he did not think it was wise to undertake its removal, but that he would make a button-hole in the urethra to save it from irritation, and that this was the best he could do for her. This was what the patient told him. For six years she was comparatively comfortable, in that she had control of the urine, but passed it through the button-hole in the urethra. At the time she came under the speaker's observation there was a cauliflower excrescence protruding from the meatus. This was of a bright cherry-red color, exquisitely sensitive, and the source of constant pain. With the cautery he removed all the urethra and the surrounding tissue from the posterior angle of the urethra, taking away all but one-fourth of the urethra at the neck of the bladder. She made a comfortable recovery from this interference, but in less than a year the disease returned with the greatest violence,

involving all the surrounding structures, becoming constitutional, and she died with great suffering about a year after the procedure he had instituted.

DR. FREDERICK J. TAUSSIG, of St. Louis, Missouri, reported a case of carcinoma of the urethra that occurred in the practice of Dr. Dorsett and himself. The patient was kept under observation for a long time. He saw her in 1900, and at that time there was a urethral caruncle, chronic urethritis, a retroverted uterus, and a relaxed pelvic floor. He operated on her for the retroversion and the relaxation of the pelvic floor, but did nothing further to the urethra. Three years later the patient returned with a history of bloody discharge for three weeks. She had been examined two months previously by an experienced man, although nothing had been detected so far as the urethra was concerned. When he examined her he found an infiltrating cancer involving the lower part of the urethra. Operation consisted of removing the entire urethra to the point of its entrance in the bladder, putting a purse-string suture around the opening which was left in the bladder so as to strengthen the muscular tissue there, and then, as a further precaution, removing the external inguinal glands on both sides, although there was no glandular enlargement at the time. The patient made a good recovery from the operation. There was slight partial incontinence. The patient was kept under observation for nine months, and then small nodules were noticed in the inguinal region and also about the internal iliac vessels, the triangle between the external and internal iliac vessels. A second operation was done, removing the affected glands, although difficulty was experienced in removing the disease about the iliac vessels on account of adhesions. A year and a half after the primary operation the patient returned with a recurrence in both the inguinal regions and higher up about the aorta. She was kept at the skin cancer hospital two or three months under trypsin treatment, which at that time seemed to offer a possible excuse for its use, but with no benefit. The patient died, and at the autopsy there was absolutely no recurrence at the primary site. The tissues about the urethra and bladder were free from carcinoma, and the glandular involvement was not merely confined to the lymphatics, but the disease involved the liver and spleen.

DR. SETH C. GORDON, of Portland, Maine, reported the case of a woman, seventy years of age, who had a growth for nearly a year about the urethra, and at the time she came under his care she had been treated by caustics for six or eight months. The growth was as large as a walnut and bled on the slightest touch. He removed the tumor with three-quarters of an inch of the urethra, bringing the remainder down and attaching it. This operation was done four years ago, since which time there had been no return of the disease. Microscopic examination revealed the tumor to be a carcinoma.

DR. HIRAM N. VINEBERG, of New York, recalled a case of primary carcinoma of the urethra that came under his observation some years ago, the disease involving the anterior third of the urethra. He did a thorough operation, went close to the vesical sphincter, and as the result of this there was a slight incontinence. Prior to the operation this woman had no symptom of pain or of hemorrhage. Microscopic examination proved the growth to be a carcinoma. He did a plastic some time afterward and found, in trying to build up an artificial urethra and in bringing the stump of the urethra forward, the operation was only partially successful. The woman could retain her urine while in bed for an hour or so. She was kept under observation three years, and during that time there was no recurrence. He had not heard from her since. At that time he reviewed the literature and collected eleven cases of primary carcinoma of the urethra.

DR. HENRY T. BYFORD, of Chicago, said he had had one such case, and called attention to the fact that this disease was not so rare in the urethra as one would judge from the number of cases reported by the essayist.

DR. FRANCIS H. DAVENPORT, of Boston, said he saw a woman who had been under the care of a female practitioner. This practitioner had tried the injection of serum for carcinoma of the urethra, and with some comfort to the patient, but the disease was not arrested. When the speaker saw her nearly one-quarter of the urethra was involved, so that it seemed absolutely impossible to remove everything radically. Radium was tried for several months, but not as thoroughly as the surgeon would like to have tried it, owing to the fact that it could not be applied in the urethra itself on account of severe pain, but only externally from the vaginal side. Finally the growth became so large that there was retention of urine and a suprapubic fistula had to be made which relieved her of the immediate symptoms; but within three months after that she died from exhaustion.

DR. I. S. STONE, of Washington, D. C., said that next to the report of individual cases, it was essential to know something as to how wide the excision should extend, and how far the malignant process extended when one began to operate on these cases of early manifestations of carcinoma of the urethra. All of the cases of cancer in this region in his experience had ultimately resulted fatally.

DR. JOSEPH BRETTAUER, of New York, said that he had repeatedly had cases sent to him which were diagnosed as carcinoma of the urethra, but which turned out to be urethral caruncle by microscopic examination, so that at times it was very difficult to decide whether the growth was malignant or not. As a rule, the younger the patient, the more malignant the growth.

DR. EDWARD L. DUER, of Philadelphia, said that not long ago he did an extensive operation for a carcinomatous growth of the

urethra which extended well into the end of the vagina. It was very large. It was difficult to operate without enlarging the opening nearly into the rectum. He removed the growth, sewed up the parts, and the wound healed. The condition returned in a short time after the operation, and the x-ray was applied to the external parts, but in the course of a few months the disease returned, then radium was tried. He commenced with a weak preparation of radium, which seemed to have had little or no influence on the disease. He then increased the strength of it a hundred per cent., and after the use of radium the patient improved and had continued to improve. Previous to this treatment the patient had been confined to bed for nearly a year. When she was carried to the country she could not walk. She was now living in Germantown, was able to ride in her carriage, and to go shopping, and seemingly was perfectly well so far as could be determined by the last examination.

DR. MANTON, in closing, said the only point he desired to make was as to whether all the cases reported were really instances of primary carcinoma of the urethra. There were a great many cases of periurethral carcinoma which were mistaken for urethral malignancy, and no doubt some of them belong to this class.

#### BILATERAL TUBAL PREGNANCY.

DR. PALMER FINDLEY, of Omaha, Nebraska, reviewed the literature on the simultaneous development of a fetus in either tube. He found twenty-eight cases reported as examples of bilateral tubal pregnancy, but only eight were unquestioned as being of simultaneous development. Of the twenty cases of doubtful identity, the clinical diagnosis was not supported by the macroscopic and microscopic findings of fetal structure in the two tubes.

To these eight cases the author added a ninth in which there was a probable simultaneous development of both fetuses in either tube, with rupture of the right tube, and the escape of the ovum through the fimbriated end of the left tube. The escape of the two ova was probably simultaneous. The pelvis was full of blood, and there was a general peritonitis. Decidual tissue and chorionic villi were found in both tubes, but neither fetus was discernible. Both ovaries were cystic and adherent. In the right ovary there was a fresh corpus luteum. An abdominal section was performed with the removal of both tubes and the escaped blood. The abdomen was drained. Death ensued from general peritonitis.

#### A SUCCESSFUL REIMPLANTATION OF A PELVIC KIDNEY IN THE FEMALE, WITH REMARKS ON THE SURGICAL TREATMENT OF KIDNEY MISPLACEMENTS IN THE TRUE PELVIS.

DR. DOUGAL BISSEL, of New York, gave a detailed statement of the case of a Mrs. C., aged forty-one, married seventeen years.

He gave the history of the case prior to operation, especially the record of a delivery by premature labor, the pelvis being obstructed by a tumor afterward found to be a misplaced kidney, described the method of surgical replacement through a median abdominal incision; also spoke of freeing the retroperitoneal pelvic kidney and forming a bed for it in the lumbar region, attaching it to the lumbar fascia and muscles by two sling sutures.

On April 10, in the presence of Drs. Cleveland, Goffe, and others, he opened the patient's abdomen through the median abdominal incision. The pelvic body was found retroperitoneal, in part immediately behind and to the right of the lower segment of the uterus. The uterus was temporarily stitched anteriorly for better vision and manipulation. The patient was then placed in an extreme Trendelenburg position so as to make the intestines gravitate out of the pelvis toward the diaphragm, where they were maintained by the aid of gauze pads throughout the operation. The posterior peritoneal surface of Douglas' culdesac was incised, and the pelvic body was separated from the loose connective tissue immediately surrounding it and delivered into the peritoneal cavity. The body proved to be the right kidney as supposed, normal in size and appearance, with its hilum directed a little upward and toward the median line. Freed from its cellular tissue it could be elevated to the sacral promontory. Two bands of tissue connecting the lower pole of the kidney with the pelvis prevented further elevation. These bands proved to be supernumerary arteries, arising from the region of the internal iliac artery or one of its branches. They were of considerable size, about one-twelfth of an inch in diameter, and about two inches in length. When these arteries were severed, the kidney could be raised approximately to its normal position. In fact, the renal artery and vein were found much elongated and could be traced upward in the direction of their normal site. The original incision in the peritoneum was then extended several inches above the ileopectineal line, and to the right or outer side of the cecum and ascending colon. The cellular structure immediately beneath this incision was torn up until the fascia of the lumbar region was exposed. The kidney was then prepared for replacement in the following manner: Its fibrous capsule was incised longitudinally along the middle of the convex border and separated from the kidney structure about one-half inch on each side. Two chromic catgut sutures (No. 2) were passed, one around each pole, which when attached to the fascia and muscles of the back, formed a sling to support the kidney and insure its maintenance of position and contact with the fixed structures until union of the opposed surfaces should take place.

To prevent the possibility of these sutures' slipping from either pole they were made to penetrate the fibrous capsule at several points as they encircled the organ; that is, both upper and lower

sutures were made to penetrate first the liberated portion of the fibrous capsule, one above and one below, one-half inch or more from the middle of the convex border of the kidney; then they were passed through the tissues, one above and one below the pelvis of the ureter as it enters the hylum of the kidney, then they were passed through the freed portion of the fibrous capsule on the other side at points opposite their entrance. In penetrating the tissues above and below the pelvis of the ureter, it was well to use the head of the needle rather than the point, so as to avoid injury to the branches of the renal artery which were commonly found in the vicinity of the upper pole.

The ends of each suture were temporarily tied together, in order that they might the more easily be found in the second step of the operation, and the kidney placed with its convex surface to the lumbar fascia, and the peritoneum sutured over it. The abdominal wound was then closed and the patient placed on her abdomen. The usual lumbar incision was made, which exposed the kidney and the knotted ends of the catgut. These ends were untied, threaded upon needles, and passed through the fascia and muscle at the upper angle of the wound. The incision was closed by the layer method, both plain and chromic catgut being used, the chromic guts forming the slings tied last. The patient made an uneventful recovery. The urine, which immediately before the operation was normal, after the operation showed a trace of albumin and granular casts.

On January 29, 1910, the patient presented herself for examination before Drs. Cleveland, Goffe, and himself. The pelvic contents were found normal and the right kidney where it was placed. The distressing symptoms of exhaustion and backache which had been more or less present for seven years had practically disappeared.

#### DISCUSSION.

DR. CLEMENT CLEVELAND, of New York, was present during the operation on this woman, and the operation as described was correct. As to the method of procedure, he felt at the time Cesarean section should have been performed, but the woman and her husband were opposed to it and it was decided to deliver the child through the normal channel, but he believed there would have been less risk to the mother by Cesarean section.

DR. A. LAPHORN SMITH, of Montreal, said that in view of the great safety of Cesarean section and the great danger of premature labor and accouchement forcé generally and the danger of injuring the kidney in such a case as the one reported, he would strongly favor Cesarean section and fixation of the kidney afterward.

DR. J. WESLEY BOVEE, of Washington, D. C., said the case reported by Dr. Bissell was very interesting. He was interested in this manner of dealing with the kidney because his thesis for

admission into the Society was with reference to this class of work. At the time he performed an operation on a dog of displacing the kidney downward to facilitate or to make possible the splicing of a portion of the ureter which had been lost by accident during operation, and which had since been done on the human being successfully. Now, Dr. Bissell had planned this operation and had done it successfully in displacing the kidney in the opposite direction. The case was unique, inasmuch as there was not a report of anything like it on record. He agreed with the essayist in the belief that this was an acquired displacement, although he did not quite understand why we should have aberrant vessels given off from the internal iliac to the kidney. His impression was that aberrant vessels to the kidney were not given off so low down, but the fact that there was a long ureter would be abundant evidence that this was an acquired displacement downward of the kidney. He was interested in the method of suturing this kidney up in the lumbar region. He did not know whether this method of placing sutures which passed around the poles of the kidney near the ureter or near the pelvis of the kidney might not do injury by cutting into the tissue of the kidney itself, as it seemed to him there might be danger there, for the reason that in case of considerable vomiting after operation the kidney might be forced markedly against these sutures. However, as he had never seen the sutures placed in the kidney in that way, he hoped the essayist would tell the members what he thought of the future of the operation.

DR. J. RIDDLE GOFFE, of New York, said he could bear personal testimony to the fact that the report as given was exactly in accordance with the facts. The case was extremely interesting to him, and he was fortunate enough to see it.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, said there were some points from an obstetric standpoint which might be brought out. Unquestionably for a condition like this, with a tumor or kidney or prolapsed spleen or an ovarian tumor in that position, Cesarean section would be the safer operation in attempting to lift up the tumor at the brim of the pelvis; but he questioned whether Dr. Smith's reason for Cesarean section would be the correct one. He did not remember how long it took the essayist to do this operation, but he should judge from the description given that it took a considerable time, and it was questionable whether one would want to add that to a Cesarean section. In his experience Cesarean section was a short operation up to a certain point. The child and the placenta could be removed easily within a minute, but the completed operation, even in a normal case, took from twenty minutes to half an hour, even though a man might be a rapid operator. The question arises in similar cases to this, with a tumor in the pelvis, whether it would be good surgery to do the other operation at the same time on account of the length of time it takes.

DR. HIRAM N. VINEBERG, of New York, stated that experience had shown that the dystopic kidney was usually a single one, and in most of the cases in which it was the only kidney the patient had it had been found very much out of its normal position. He asked Dr. Bissell if that was true in his case and what precautions were taken to prevent removing the kidney and in determining whether a second kidney was present. He thought the statistics showed that in about one to three thousand five hundred or four thousand cases there was only one kidney present.

DR. EDWARD REYNOLDS, of Boston, said it had been assumed throughout the discussion that this was an acquired malposition of the kidney. If, on the contrary, it was a partial malposition of the kidney, the field open for us in future cases was much larger. Embryologically, the kidney was developed near the posterior end of the sacrum. Subsequently it might rise forward retroperitoneally precisely as the ovary and testicle migrated posteriorly during development. The primitive kidneys were nourished by vessels springing off opposite each body. A few of them coalesced to make a permanent kidney, and the body so formed subsequently migrated forward. It did not seem to him that the length of the ureter was sufficient evidence that the displacement was acquired in the case reported by Dr. Bissell. He thought time would show that the failure of this kidney to migrate was due to the persistence of the posterior vessels which should have been absorbed, and everyone who had dealt with a ureter throughout its length retroperitoneally knew that the moment it was freed from the peritoneum it became a tube which was capable of easy elongation, and what appeared short became long. The most interesting point in the whole paper was the question of whether Dr. Bissell had not given us a means of complete or, at any rate, moderate replacement of congenitally displaced kidneys.

The speaker's experience with Cesarean section had made him feel that it was not one of the few operations in which rapid completion of the operation was essential to success. He would be sorry to do Cesarean section and go on to a lengthy operation at this time. He had been obliged to remove the kidney with Cesarean section; he had been obliged to remove a large ovarian cyst. Both patients did well, but it was a misfortune to tax any operation by the choice of a Cesarean section.

DR. BISSELL, in closing, said he did not determine the presence of the other kidney. It was not contemplated at any time to remove the kidney in the pelvis, therefore he did not think it was essential to determine that point. It would have taken time to have done so and would have been attended with more or less danger. But he did think of it at the time. He should never have replaced the kidney if he had done Cesarean section. He thought it would have jeopardized her life unnecessarily. It took considerable time to do the operation, and the replacement of the kidney would not have been fair with Cesarean section.

## POSTOPERATIVE CYSTITIS.

DR. JOSEPH TABER JOHNSON, of Washington, D. C.,\*

## DISCUSSION.

DR. HENRY T. BYFORD, of Chicago, stated that at the Woman's Hospital, Chicago, in the earlier days women were catheterized before operation because of the fear of a distended bladder. As the result cystitis developed occasionally. This practice was stopped. He did not know whether it was the general custom or not among practitioners, but he induced his patients to pass urine before operation, if possible, and there were very few who could not do this. By so doing the danger of cystitis after operation from the use of the catheter was largely eliminated. Some nurses in using the catheter allowed the labia minora to drop over the urethra, in this way germs were deposited on the end of the urethra, and were carried into the bladder with the catheter. The nurse should irrigate the urethra so that it is clean, and then great care should be taken to prevent anything from being carried into the urethra and bladder with the catheter.

DR. C. C. FREDERICK, of Buffalo, New York, said that in order to prevent chronic cystitis, chronic trigonitis, it was necessary to abstain from the use of the catheter, if possible, but if catheterization had to be resorted to it should be done under the most favorable conditions, and every precaution taken to prevent infection of the bladder.

DR. PHILANDER A. HARRIS, of Paterson, New Jersey, said that in taking the history one should be exceedingly careful to have a record of the patient as to whether she had pain in passing water or a history of cystitis prior to operation. An important point was to require every patient admitted to the hospital for the purpose of undergoing an operation to urinate in the dorsal position before operation.

DR. FREDERICK J. TAUSSIG, of St. Louis, Missouri, said that if we could get patients to void urine spontaneously, we would eliminate very largely postoperative cystitis. A few cases of so-called spontaneous infection or infection from surrounding infected tissues had been reported, but these were questionable.

DR. EDWARD REYNOLDS, of Boston, said that infection of the bladder did not come so much from the introduction of the point of the catheter into the urethra as it did from the fact that in the subsequent passage of the instrument the nurse allowed the labia to fall against the catheter and foreign material was carried into the bladder in that way.

DR. J. M. BALDY, of Philadelphia, stated that if nurses were taught how to use the catheter properly and not allow the labia to come together from the time they had disinfected the parts, the number of cases of cystitis following operation would be greatly reduced.

\*See original article, page 868.

## IMPROVED OPERATION FOR EXTREME CASES OF PROCIDENTIA AND CYSTOCELE.

DR. J. RIDDLE GOFFE, of New York, read a paper on this subject, which will be published in this JOURNAL.

## DISCUSSION.

DR. CHARLES JEWETT, of Brooklyn, New York, said that he had had the privilege and pleasure of watching Dr. Goffe do this work, and his technic was the most complete and perfect of any he knew. He had been especially gratified to observe that he concluded the operation by securely building up the perineal buttress beneath the bladder.

DR. I. S. STONE, of Washington, D. C., said that this method or a slight modification of it had given him the utmost satisfaction. He had no knowledge of any cases of cystocele or prolapse having recurred if this work had been properly done. He did not wish to convey the impression that his work was better than others, but the possibilities of this operation were so thoroughly good that if any surgeon would try it he would be rewarded by perfect success.

DR. HENRY T. BYFORD, of Chicago, described a modified operation which he had done in these cases.

DR. SETH C. GORDON, of Portland, Maine, said he was satisfied all of the work the profession had been doing heretofore in their efforts to fix the uterus, after complete procidentia, had been of very little avail. Sooner or later the uterus gave way. Of late he had been removing the uterus in every case and stitching up the remnants of the vagina to the broad ligaments, and fixing it as well as possible, and he believed this opened up a new line of work in this direction, particularly when the uterus was removed.

DR. CLEMENT CLEVELAND, of New York, said he had followed the operation described by Dr. Goffe for some years, and in his hands it had succeeded in the great majority of cases. He had done it over thirty times and he could recall no case in which it had not been a success.

DR. C. C. FREDERICK, of Buffalo, New York, said he had been doing this operation for the last four or five years, and he had taken the position that in cases of advanced procidentia the removal of the uterus as a part of the operation was the *sine qua non* to success. He had done from seventy-five to eighty of these operations for procidentia, and had invariably used catgut as suture material and had not had any ill results from it.

DR. J. M. BALDY, of Philadelphia, said this operation was so extensive in its denudative qualities and so dangerous in its possible results as to be absolutely unwarranted as a simple cystocele operation.

DR. LEROY BROWN, of New York, said he had seen Dr. Goffe do this operation often. He had done it himself, and he had had

the privilege of seeing one of his cases upon whom he had operated and a more ideally perfect result he had never seen. The uterus was in excellent position.

DR. GEORGE GRAY WARD, JR., of New York, said that Dr. Goffe taught him how to do this operation five or six years ago, since which time he had done it in several instances, and he could only bear out what Dr. Broun had said, that the results would speak for themselves. He had not seen a failure from the operation where it had been properly done. The patient was satisfied, and that was the essential thing after all.

INTRAMURAL SEQUESTRATION AND FIXATION OF THE CORPUS AND  
FUNDUS UTERI FOR THE CURE OF PROCIDENTIA UTERI  
EXISTING IN WOMEN WITH WHOM FURTHER  
PREGNANCY WAS NOT POSSIBLE.

DR. PHILANDER A. HARRIS, of Paterson, New Jersey, read a paper on this subject, which will appear in this JOURNAL.

GALL-STONES DURING PREGNANCY AND THE PUERPERIUM.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, read a paper on this subject in which he drew the following conclusions:

1. Gall-stones are most commonly met with in women between the ages of twenty and thirty-five.

2. Gall-stones are more common in women than in men.

3. There are reasons for thinking that child-bearing has something to do with the frequency of gall-stones in women.

4. This was borne out by finding that in five hundred and forty-two patients where the gall-bladder was palpated during the course of abdominal operations, gall-stones were found to be present in 64, or 11.8 per cent. of the cases.

5. The percentage of patients with gall-stones who had born one or more children was 75 as against 65.7 per cent. in women who had no gall-stones.

6. In the present series of pregnant patients with cholelithiasis, in nearly one-third of the cases the onset of the attack was at the fifth month of gestation, or at the time when the uterus was approaching the level of the umbilicus and beginning to crowd the intestines toward or upon the bile passages.

7. In the puerperal cases the onset of the attack in one-half of the cases was during the first seven days postpartum.

8. Chills, elevation of temperature, associated with jaundice, are frequent in gall-stones complicating pregnancy and the puerperium.

9. In the series studied there was a surprisingly large percentage of pregnant patients with jaundice, fifteen out of twenty-five, or 60 per cent.

10. Only one out of the ten puerperal patients had jaundice.

11. The operative mortality for the twenty-three pregnant patients was 13.04 per cent.

12. The operative mortality for the puerperal cases with cholelithiasis was 11.1 per cent.

13. In the pregnant patients with cholelithiasis more than one-half of the stones were in the gall-bladder alone. The same may be said of the puerperal cases.

14. It is probable that there is no greater tendency for gall-stone operations to interrupt pregnancy than is the case with other abdominal operations during various periods of gestation.

15. It is advisable, when cholelithiasis complicates pregnancy and the puerperium, to choose the operative procedure which can be performed in the shortest possible time consistent with the existing conditions.

16. The condition of the pregnant patient as regards the cholelithiasis should be the determining factor as to when the operation should be performed. Whenever possible the operation should be postponed until the child is viable.

17. The diagnosis of cholelithiasis during pregnancy and the puerperium will not be difficult in typical cases if the possibility of the complication be borne in mind. Much reliance can be placed upon the jaundice, which seems to be more prevalent in pregnant than in nonpregnant women with gall-stones.

#### DISCUSSION.

DR. W. FRANCIS WAKEFIELD, of San Francisco, stated that the relationship between pregnancy and gall-stones was very interesting. He believed a very large percentage of women had gall-stones, and a curious thing was that in studying the histories of these women carefully it would be found that a large percentage of them could trace the beginning of their symptoms of gall-stones to pregnancy. He thought about 75 per cent. of the women who came to him with symptoms of gall-stone disease dated the beginning of those symptoms back to pregnancy. Gynecologists were neglecting the gall-bladder. The gall-bladder should be examined every time the abdomen was opened, and every time stones were found in the gall-bladder they should be removed. It was a great mistake, however, to operate for the removal of gall-stones during the period of pregnancy, if it could be avoided.

DR. PHILANDER A. HARRIS, of Paterson, New Jersey, said that anyone who operated for gall-stone disease in the course of pregnancy might well wonder whether it was right to do the operation at that time or not, but as near as he could understand from the cases reported, he did not think the decision to operate should rest upon the mere fact as to whether the patient was pregnant or not. He thought this decision should be governed by other conditions, and those would be the conditions which would govern us in the removal of gall-stones or gall-stone disease, no matter whether it occurred in connection with pregnancy or not.

DR. A. LAPHORN SMITH, of Montréal, questioned whether it would be a good thing to operate on a woman for the removal of gall-stones who was six months advanced in pregnancy. He would express the opinion that it was not a good thing to do so at that time because the size of the uterus made the operation difficult. The pregnant woman should be carried along with morphine and other treatment until she had been delivered of her child, and then operated on for the gall-stones.

DR. W. GILL WYLIE, of New York, had been watching the gall-bladder whenever he opened the abdomen through an incision large enough to introduce his hand, and he had found that the percentage of gall-stones was very much greater than he had expected. Whenever the gall-bladder was distended with fluid the patient would have nausea and vomiting after operation, almost without exception, in his experience, and when it was found flaccid and empty, vomiting was rarely ever severe.

DR. HIRAM N. VINEBERG, of New York, said that a few years ago he was called in consultation in a case of supposed puerperal sepsis. The woman had been delivered ten days before. She was very ill, had a temperature of  $104.5^{\circ}$ , pulse 120, and complained of pain in a part of the abdomen on the right side. She had given no history of gall-stone attacks prior to that so far as could be learned. He examined her carefully, and came to the conclusion that the trouble was not with the pelvic organs. He went higher up and found a distended gall-bladder and made a diagnosis of cholecystitis. The woman was transferred to the hospital, was operated on, and the gall-bladder was found full of small stones, with mucopurulent fluid in the gall-bladder. The woman made a good recovery.

He did not agree with Dr. Smith as to the nonadvisability of operating on some of these cases during pregnancy.

DR. HENRY T. BYFORD, of Chicago, said that undoubtedly a great many women had gall-stones, and perhaps in most of the cases, instead of the gall-stones originating from pregnancy, they were old instances of people who had been known to have had indigestion, who had not perhaps consulted a doctor, and whose cases in those days had not been diagnosed. A great many such women had had gall-stones for a long time, but pregnancy was merely the cause of the first recognizable symptoms.

DR. JOHN F. THOMPSON, of Portland, Maine, said that in January, in his service, he had turned over to him from the medical side a patient who was supposed to have perforation from a duodenal ulcer. The period of illness was something like twenty-four hours. Patient had considerable temperature, and was three or four months pregnant. The soreness and pain and tenderness gave indications as to the point of election for making the incision. He found a perforation of the gall-bladder with stones and pus and some bile, which fortunately were shut off by folds of omentum. The operation was uncomplicated. The adhesions were not very dense. With the

scissors he removed the edges of the perforation, drained the gall-bladder, and the patient had no interference whatever with pregnancy, and was not three months more advanced.

DR. GARRY HOUGH, New Bedford, Massachusetts, stated that a month ago he was called in consultation to see a woman in a moribund condition. She had been delivered about ten days before. The first week of convalescence was normal, then the symptoms pointed to acute cholecystitis. As the woman was moribund no operation was done. After death several quarts of deeply bile-stained fluid were removed from the abdominal cavity which demonstrated the nature of the case. He had operated on two cases of gall-stones during pregnancy. One was a woman, twenty-three years of age, and two months pregnant. She had stones in the gall-bladder and in the duct. She also had chronic pancreatitis. At the time he operated on her she had just recovered from an attack of acute pancreatitis, as was evidenced by extensive fat necrosis in the omentum. Removal of the stones and drainage resulted in a cure. About one month after operation she was delivered of a three months fetus. The other woman was five months pregnant who had acute cholecystitis with gall-stones in the gall-bladder. The gall-stones were removed from the gall-bladder with drainage, and she made a prompt recovery, and went on to full term.

DR. RICHARD C. NORRIS, of Philadelphia, said that operations on gall-stones during pregnancy should be determined by the character of the cases. If the case was an aggravated one, the woman should be relieved of her gall-stones independent of the pregnancy, but if it was a case where we could tide the patient over until labor had been accomplished, it was better to do so. We should apply the same principles of surgery to gall-stones associated with pregnancy the same as we would to women independent of pregnancy.

DR. PETERSON, in closing, said we must operate on these pregnant women, and also upon the puerperal woman, according to the conditions presented by the gall-stones.

#### FIBROID TUMORS COMPLICATING PREGNANCY AND RENDERING NATURAL LABOR IMPOSSIBLE.\*

DR. B. F. BAER, of Philadelphia, read a paper on this subject.

#### DISCUSSION.

DR. W. GILL WYLIE, of New York, said that if the fibroid tumor was so large as to interfere with the delivery of the child, it should be removed, but if nothing disturbed the woman's health, so far as the fibroid was concerned in the way of hemorrhage, and the tumor or tumors were situated above the os internum, undoubtedly the woman could be delivered of a healthy child in the natural way.

DR. HIRAM N. VINEBERG, of New York, said that he had seen five or six cases in which pregnancy was complicated by fibroid

\* See original article, page 895.

tumors. It was rare that we were called upon to operate on these cases during pregnancy, for the majority of these women would deliver themselves normally. At the meeting of the International Medical Congress, held at Budapest last year, he was astonished to find that Schauta in his extensive experience had met with so few cases of fibroids complicating pregnancy. In something over one hundred thousand cases of pregnancy the number of cases of fibroids complicating this condition was under ten. The trend of the discussion at that meeting was to treat these cases conservatively.

DR. MALCOLM MCLEAN, of New York, said that not infrequently fibroid tumors took on a retrograde movement in pregnancy as the result of that condition. He had seen two cases in which large tumors took on retrograde development and became almost entirely dissipated after delivery.

DR. SETH C. GORDON, of Portland, Maine, stated that when a woman had a fibroid that was troubling her, she had better have hysterectomy performed.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, said the experience of Schauta did not correspond with that of the members of this society. The majority of the Fellows had seen one or more cases of fibroid tumor complicating pregnancy. He had seen in the last year three such cases. While we should always deal with this subject conservatively and give every chance to the woman, we should still remember that the fetus should have a chance, and if the pregnant woman could go on without jeopardizing her life without an operation, she should have that privilege. But it must be remembered that a number of these women would abort.

DR. EDWIN B. CRAGIN, of New York, said that complications would occasionally occur from fibroids in labor and the puerperium, and yet every one of the Fellows during a large maternity service had been impressed with the frequency of fibroids and pregnancy, and the frequency with which nurses would make a diagnosis of fibroid as they were holding the fundus after the expression of the placenta. What impressed him was the infrequency of complications. Within the last three months he did a Cesarean section in a case of fibroid tumor obstructing the canal. On the other hand, he had had a large number of cases at the Sloane Maternity which had given no trouble.

DR. I. S. STONE, of Washington, D. C., said there ought to be a distinction made between the disappearance and reduction in the size of these fibroids. He did not believe in the disappearance of fibroids unless degeneration set in, or unless necrosis took place and a submucous abscess formed and discharged. A fibroid might disappear in that way or on account of twisting of the pedicle become separated from the uterus and disappear. But he took no stock in the idea that fibroids would disappear after pregnancy, as a rule.

DR. CHARLES M. GREEN, of Boston, said that in one case he

found the pelvis of a woman filled, with a fibroid tumor, so that nothing else could be felt. During transit to the hospital the fibroid moved out of the pelvis, and when he saw the woman he could reach the os and found a breech presentation. He gave the woman further time, the fibroid got out of the way, the woman was delivered of a living child, and made a normal convalescence. When she became pregnant again, he watched her through pregnancy, and nothing had occurred in the size of the fibroid. She went through that pregnancy, delivered herself, and there was no perceptible increase in the fibroid.

DR. EDWARD REYNOLDS, of Boston, stated that two or three years ago he saw a young woman who was pregnant with a fibroid in her uterus. She miscarried. He determined the position of the fibroid with fingers inside the uterus and hand outside. He operated on her for other causes about a year ago and found at the site of the fibroid no tumor whatsoever, but a white, comparatively bloodless area in the uterine wall, which evidently represented complete disappearance of the fibroid. He did not believe such cases were rare. In the general question of fibroids during pregnancy, we should discriminate carefully between fibroids of the fundus and fibroids in the lower segment of the uterus. Fibroids of the fundus, especially if pedunculated, could be removed safely during pregnancy and complicated labor comparatively little.

DR. WILLIS E. FORD, of Utica, New York, spoke of the influence which pregnancy had upon a fibroid tumor, and reported the case of a girl whom he saw before her marriage with an intramural fibroid which reached halfway up to the umbilicus. He was called to see her after her marriage, when she was pregnant at about the fifth month. This was fourteen years ago. He got ready to do a Porro operation, but fortunately nothing happened to warrant it. She was delivered in the normal way, and was now the mother of a boy of thirteen. The other day he sent for her to examine her and found that this fibroid tumor had entirely disappeared so far as he was able to judge.

DR. RICHARD C. NORRIS, of Philadelphia, had seen tumors situated in the lower segment of the uterus retract, the tumors drawing themselves out of the way by the action of the longitudinal fibers, and disappearing when he was about ready to perform Cesarean section, and the women being delivered spontaneously. As to myomectomy during pregnancy, it was his conviction that this operation should be more restricted during pregnancy than at other times.

DR. GEORGE TUCKER HARRISON, of New York, said it was well known that in negro women myomata were much more common than in those of the white race. In regard to conception, the exhaustive paper of Hofmeier demonstrated very conclusively that the position of a myoma was not a bar to conception, and the proof of this was found among the negro

race. A number of years ago he reported a case in which myomectomy was performed on a woman who was several months pregnant, and she was carried to full term. A fibroid tumor had grown in the meantime in the pelvis which necessitated Cesarean section, followed by hysterectomy, and unfortunately the woman had sepsis and died from it.

DR. BAER, in closing, said that if a woman had a fibroid tumor complicating pregnancy, and she had not born any children, but desired to have one child, she should have that privilege, and pregnancy be allowed to go on in the presence of the fibroid. On the other hand, however, it was the duty of the obstetrician to advise her as to the dangers of this fibroid.

(To be continued.)

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## REVIEWS.

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TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Volume xxi. For the year 1908. pp. 492. Published by the Society, 1909.

This volume contains the papers read before this distinguished society at its twenty-first annual meeting, held in Baltimore on September 22, 23 and 24, 1908, together with their discussion and the papers of candidates elected at that meeting. The papers appeared in this JOURNAL for November, 1908, and after.

ELEMENTS D'OBSTETRIQUE. Par DR. V. WALLICH, Professeur Agrégé de Ecole de Médecine de Paris, Deuxieme Edition. G. Heinheil, Paris, 1910. Price, 8 francs.

The first edition was renewed in the AMER. JOUR. OBST., October, 1907. This edition differs but slightly from the first. The volume displays little individuality. The views expressed are orthodox, and for students the book should prove serviceable.

E. M.

THE SEXUAL LIFE OF WOMAN: IN ITS PHYSIOLOGICAL, PATHOLOGICAL, AND HYGIENIC ASPECTS. By E. HEINRICH KISCH, M. D., Professor of the German Medical Faculty of the University of Prague; Physician to the Hospital and Spa of Marienbad; Member of the Board of Health, etc. Only authorized translation into the English language from the German. By M. EDEN PAUL, M. D., With 97 illustrations in the text. New York: Rebman Company, 1123 Broadway. Price, \$5.00.

The book affords a satisfactory survey of phases of gynecology that are, as a rule, not dealt with in text-books. The author divides the sexual life of woman into three periods: *the menarche* (onset of menstruation), *the menacme* (culmination of sexual activity), and *the menopause*. The physiological and pathological conditions affecting each period are discussed, especial attention being paid to the physical at the expense of the psychical. The

author handles his subject in a thoroughly clinical fashion and has avoided the temptation to be excessively morbid. Therapy is but cursorily suggested, and this is mostly hygienic. The author's style is somewhat diffuse and prolix and the text would gain greatly by a greater subdivision into headings. The translation is satisfactory and the index is very complete. E. M.

**HANDBOOK OF OBSTETRICS.** By R. CADWALLADER, A. M., M. D., Assistant in Obstetrics, University of California, Medical Department, San Francisco, Cal. With 104 illustrations in the text. Philadelphia: F. A. Davis Co., 1908. Price, \$2.00.

Even a swift glance at the contents of this book has convinced us that the author is not qualified to write a book on obstetrics. In the first place, the author's knowledge of obstetrics is not nearly sufficient to qualify him to teach this art to others. In the second place, he reveals little acquaintance with the rules of English grammar, so that vast stretches of his thought are absolutely unintelligible. In fact, the sentences that can be parsed are hopelessly in the minority. In the third place, the book is a veritable mine of misinformation.

A list of all the deficiencies in the book would make a volume of formidable size: we have neither the time nor the inclination to do this. We believe we can best indicate the nature of the contents by citing a few passages taken at random. "The breasts are developed and specialized sebaceous glands." "The uterus and tube are developed from one embryonal structure, the duct of Müller." "While undergoing this change (menstruation) the girl should be at home, surrounded with quietness. She should sleep long and regularly, eat simple food, not work, especially mental effort, to the point of fatigue, have little company, and be free from calls on her nervous energy, with plenty of outdoor exercise. Our modern system of educating girls is the worst possible. At about this time they are undergoing the strain of high-school life, with perhaps music added and more or less social requirements, when from thirteen to fifteen they had better be doing nothing." "They (the ova) are of spherical shape, 200 millimeters (!) in diameter, and are the largest cells in the human body and visible to the naked eye. Each mature ovum is surrounded by a mass of cells lining a cavity—the discus proligerus—the whole lying to one side of the vesicle. The lining layer of cells, fluid, discus proligerus, and ovum are known as a Graafian follicle, 1/125 inch in diameter. They develop early, being mature at birth. Nature is lavish in providing for species perpetuation. Fully seventy thousand are present at birth; of this number, thousands are never fertilized, and thousands more, when fertilized, do not lodge in the womb, of these few the majority are lost, and the infant at birth is the apex of an increasing loss at every backward step. Of the children born, but few reach maturity. At puberty the ova begin discharging at intervals; probably several times a

month as they successively mature, and not certainly during the congestion and excitement of sexual intercourse."

While this book has been addressed to students, we feel that it would be a highly charitable act to keep it from their hands.

E. M.

THE PROPAGANDA FOR REFORM IN PROPRIETARY MEDICINES.

*Sixth Edition.* Containing the various exposes of nostrums and quackery which have appeared in *The Journal of the American Medical Association*. Price, paper, 10 cents; cloth, 35 cents.

Pp. 292. Illustrated.

This book presents in convenient form most of the exposures that have appeared in *The Journal of the American Medical Association* showing fraud either in the composition of various proprietary preparations or in the claims made for such preparations. Not all of the products dealt with, however, are such as are—or have been—used by the medical profession. Many preparations of the "patent medicine" type have been subjected to analysis and the results of such examinations appear in this volume. The book will prove of great value to the physician in two ways: 1, It will enlighten him as to the value, or lack of value, of many of the so-called ethical proprietaries on the market, and, 2, it will put him in a position to answer intelligently questions that his patients may ask him regarding the virtues (?) of some of the widely advertised "patent medicines" on the market. After reading the reports published in this book physicians will realize the value and efficiency of simple scientific combinations of U. S. P. and N. F. preparations as compared with many of the ready-made, unstable, and inefficient proprietary articles.

OBSTETRICS IN ABSTRACT. By WILLIAM D. INGLIS, A. M., M. D., Professor of Obstetrics in the Harling-Ohio Medical College; Obstetrician to the Protestant Hospital of Columbus, Ohio. Price, \$1.00. Published by Medical Abstract Publishing Company, 219 Sixth St., Pittsburgh, Pa.

The book contains 171 closely written pages and can be carried in the vest pocket. While the book contains a surprising mass of information, it is not, in our opinion, sufficient for the needs of a practitioner. We see very little object in this book except as a means for brushing up for medical examinations by students. Even for this purpose, it is doubtful whether such books should be encouraged.

E. M.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY; for Practitioners and Students. By D. TOD GILLIAM, M. D., Emeritus Professor of Gynecology in Harling-Ohio Medical College, etc., etc. Third revised edition. Illustrated with 350 engravings, a colored frontispiece, and thirteen full-page half-tone plates. F. A. Davis, Philadelphia, 1908. Price, \$4.50; half morocco, \$6.00.

Although this book has reached a third edition, we confess we have failed to discover wherein its popularity lies.

The text is superficial, unscientific, and thoroughly old-fashioned. The author reveals little acquaintance with pathology, bacteriology, or the newer studies in gynecology, and many of his therapeutic procedures savor of prehistoric times. Thus, for instance, he recommends a rectal injection of Mist, asafœtida in shock; describes superficial methods of cauterization as a radical treatment for cancer of the cervix, and advises against reopening of the abdomen for secondary hemorrhage after laparotomy. His experience with pathologists has evidently been unfortunate, and while he recommends excision of pieces of doubtful tumors for pathological examination, he avers that he would rather trust clinical evidences. He never fails to remind us that the instruments and catgut are always to be sterilized before operations, but the use of rubber gloves is not even mentioned.

The majority of the illustrations are pictures of instruments. We find the greatest variety of clamps, forceps, scissors, etc., nor has the author forgotten the hypodermic syringe, the douche bag, finger cot, and even the bed pan. The poorly executed histological pictures are, with few exceptions, misrepresentations. For instance, on page 112, we find a wretched illustration of the walls of the vagina, labeled, "showing muscularis mucosæ." The picture shows no muscularis mucosa for the simple reason that the vagina possesses none. Nobody would recognize the gonococcus as shown on page 111. The illustration of endometritis on page 275 shows nothing of the sort, while the illustrations of the "uterus of a girl of fourteen," on page 271, of the "cortex of the ovary," on page 253, and of "adenoma of the kidney," on page 555, might as well be anything at all. The illustration of adenosarcoma, on page 479, shows no sarcoma.

E. M.

## BRIEF OF CURRENT LITERATURE.

### OBSTETRICS.

**Development of the Viscera in the Fetus.**—Francesco Valtorta (*Ann. di Ostet. e gin.*, Dec., 1909) has very carefully measured and weighed the viscera of the fetus in order to discover their normal weight and size, both internally and externally, and to establish a standard. At the Anatomo-Pathological Institute of the Hospital of Milan he made these measurements on all the fetuses which died when their mothers were brought to the clinic in labor. He gives the measurements of brain, heart, lungs, thymus, liver, spleen, pancreas, kidneys, suprarenal capsules, intestine, stomach, testicles, uterus, and ovaries. The thorax of the new-born fetus is flattened like that of the clavicultured animals. The circumference is about 34 cm. at birth. The antero-posterior diameter depends on the development of the heart and thymus; the relatively small lateral dimensions are due to retardation of development of the respiratory organs; extension at the base is due to the relatively enormous size of the liver and abdominal organs. The most developed organs are those that must exercise their functions immediately after birth.

**The Spirocheta Pallida of Schaudinn in the Livers of Embryos and Macerated Fetuses, and the New-born.**—A. Girauld (*L'Obstét.*, Jan., 1910) says that clinical signs often are not sufficient to diagnose heredo-syphilis, and the gross [and histological] lesions of the placenta and viscera are not sufficient to distinguish them from various degenerative processes. The presence of *spirocheta pallida* is a positive criterion for diagnosis. The author collected all the suspected cases during five months at the Hôpital Saint Louis and during the year and four months at the Maternité, and subjected the fetal organs to examination. Syphilis is the greatest cause of abortion and death in young infants. Two factors influence the effect of the syphilitic virus; they are the origin of the syphilis, and the length of time since its contraction. Paternal syphilis is admitted when an uninfected woman is delivered of an infected infant. The mother is then infected by the child, either during pregnancy, or lactation, the infection having remained latent during pregnancy. When a woman has had a syphilitic child by a first husband, she may bear other syphilitic children to an uninfected second husband. Early abortion in paternal syphilis is less frequent, since the virus acts from the beginning of conception. Syphilis of maternal origin is very rare when the father is not infected. Syphilis may produce placental hemorrhages, but more often

death of the infected fetus results from septicemia due to spirochetes. Postconceptional syphilis of the mother, when the infection occurs toward the end of gestation, may spare the infant, but it may be later infected after birth by lactation. During the first half of pregnancy the transmission of syphilis to the fetus is almost always fatal. In the sixth and seventh months occurs a period when it may not be infected. A period of fifty days is necessary for the infection to reach the fetus from the mother by way of the blood. At an epoch much nearer infection the virus may reach it by the placental route. The most frequent cases are ante-conceptional syphilis; from the placenta the maternal blood carries the infectious organism to the fetus; it is a blood infection. Here the appearance of the disease is later than in paternal syphilis. The author has found the spirochetes in the fetus produced by a woman in the tenth year after her infection. In maternal ante-conceptional syphilis the death of the fetus is the rule. The influence of time on syphilis is to attenuate the virus; the effect is spent on the first generations. Mortality is greatest during the first three years after infection; it then sensibly decreases. The spirochetes may be found in the placenta, and in all the tissues of the fetus. The liver is the organ that ordinarily contains the largest number of parasites; the lesions in the liver are those of a general septicemia of hemorrhagic type; the spirochetes occupy the cellular interstices. Among two hundred autopsies only three cases have shown gummata in the liver. Of macerated syphilitic fetuses 64 per cent. show spirochetes in the liver. In living infants who are syphilitic the liver contains many more spirochetes than are found in macerated children, which would indicate that maceration does not especially favor multiplication of the parasites. Absence of spirochetes coincides generally with treatment received by the mother during pregnancy; hence every woman suspected of syphilis during pregnancy should undergo a course of treatment by mercury, even when the infection is old. Every woman who procreates with a syphilitic man should be treated in the same manner. There are cases in which the mother has been given treatment throughout pregnancy and yet spirochetes have been found in the liver of the fetus. Excessive weight of the placenta, of the liver or spleen is an indication of syphilis. Examination of the placenta is generally negative; had syphilis been a teratological factor monsters would be an indication of syphilis. In hepatic gummata spirochetes are generally abundant.

**Menstruation in Its Relations with Ovulation, Fecundation, Gestation, and Lactation.**—Pinard (*Bull. méd.*, Dec., 1909) gives a most original conception of the position which menstruation holds with reference to gestation. He says that a woman in a state of nature should never have any menstruation, for she should be always either pregnant or nursing an infant, during both of which periods she does not menstruate. She has her

monthly periods because the ovule which she has produced has not been fecundated, and another will arrive periodically at maturity according to a harmonious rhythm. Menstruation is not a function, but the manifestation of an ovular abortion. He wonders that no woman physician has made a study of menstruation, since a man can only know these things at second hand; the woman having experienced them can tell of and understand them at first hand. Menstruation is a periodic flow of blood from the uterus in a healthy woman, during the period of procreation, a flow that is suppressed absolutely by gestation, and relatively by lactation. The first appearance of the menses is at about fourteen years of age; the time is later among the children of those who are at ease than among the toilers. Those who begin their menses late may also be fecundated late in life. The oldest woman delivered by Pinard was 52 years of age. This was a remarkable exception, and was in a primipara. Out of 60,000 women delivered at the Baudelocque, not one was confined after the age of fifty. The ovary is the cause of menstruation in some way. If there is a correlation between ovulation and menstruation, and menstruation is a consequence of ovulation, there should be no fecundation without menstruation. Since 1900 there have been confined at the Baudelocque 10,886 women, of whom 505 had not had their periods; many were nursing. He gives examples of women who had conceived after from seven to eleven years of amenorrhea. He concludes that ovulation complete, perfect, followed by fecundation is never succeeded by menstruation. The cases of menstruation during pregnancy he classes as pathological. Menstruation is not necessary to fecundation. A woman who has never had her menses can procreate. We know that when no time is lost by the spermatozoon and the ovule is mature they cannot reach one another under twenty-eight to thirty hours. The ovum is not always mature, but the spermatozoon may remain alive in the female organs from eight to twelve days. It is impossible to say at what time in the month fecundation occurs, and we cannot tell when gestation will end. Fecundation alone does not constitute gestation. The author does not believe that menstruation ever occurs normally in gestation. When gestation occurs without labor, and the fetus is retained no menses occur, but if the pregnancy is extrauterine menstruation returns from six weeks to two months after the death of the fetus. Of women who are nursing for the first time 27 per cent. have no menses during lactation; if pregnant for the second time 35 per cent. do not menstruate; if for the third time, 60 per cent. do not menstruate, whatever the duration of lactation. A new pregnancy should not prevent continued lactation any more than menstruation should prevent it. We should not consider a menstruating woman as a sick woman, but rather believe that any adult woman not menstruating is abnormal. Up to the age of menstruation a woman is a being who has a treasure within, in the form

of ovules. When these primordial ovules develop she is under the dominion of the species; a harmonious cycle begins; ovulation, fecundation, gestation, labor, lactation. Menstruation is not among these; it is an ovular abortion only. A castrated woman has no menses because she has no ovules.

**Lactose in the Urine of Pregnant Woman.**—E. Gérard and M. Oui (*L'Echo méd. du Nord*, Dec. 12, 1909) obtained vary different results in the search for lactose in the urine of pregnant women from those of Porcher, who stated that he found it present in almost all cases of pregnancy in the days or weeks preceding labor. The authors examined forty-four cases, making 171 tests, in women who were at different stages of pregnancy. Out of this number he found lactosuria in only five cases, and then only in very small amount, the reaction being feeble. Porcher ascribed its occurrence to the nearness of lactation. But the patient of the author's in which it was most marked was a woman who was hardly able to nurse her infant at all on account of small amount of milk. The writers found only 12 per cent. of cases of lactosuria.

**Treatment of Placenta Previa.**—A. Dührssen (*Berl. klin. Woch.*, Dec. 13, 1909) states that the modern Cesarean section should not be regarded as the only method of treatment of placenta previa. He regards the use of metreuryesis with incisions as of great value in delivering a living mother of a living child. The disadvantages of forced labor are these: death as a result of the severe operative procedure; deep tearing even into the abdominal cavity; tearing into the vascular parts of the uterus; causing the placenta to be detached too soon; difficulty of making a correct suture; tearing into the parametrium; leading to endometritis and displacements of the uterus. The author believes that the use of metreuryesis can be so applied that it will cause no bad effects. In case of dead or nonviable children the proper treatment is combined version and extraction. There are in the first seven months of pregnancy cases in which the cervix is so rigid that mechanical methods of dilatation are impossible without tearing the cervix severely. In these cases vaginal Cesarean section has given the author the best results. Tamponade gives delay enough to permit of bringing the patient to a hospital. In these cases metreuryesis is not applicable because the introduction of a balloon is not possible. Total placenta previa is not a contraindication for metreuryesis. As soon as the fetus reaches the placental lip the latter is bored through and the balloon introduced. This method diminishes the maternal bleeding, and if the heart tones of the child are carefully noted there need be no danger to the child, since labor may be quickly concluded when necessary.

**Difference of Temperature of the Legs in Phlegmasia Alba Dolens.**—Marcel Delestre (*Ann. de gyn. et d'Obst.*, Jan., 1910) quotes Pinard as stating that there is a marked difference in the temperature of the two legs in phlegmasia alba dolens,

which may be of diagnostic value before the occurrence of the pain and swelling. This may be appreciated by the naked hand; it persists as long as the condition lasts, and disappears when the disease is cured. To prove this assertion the author has tested the temperature of the two legs with a skin thermometer in healthy and sick women. Among the well women he found that there is a difference in the temperature of the two legs in favor of the left one, the temperature of which is a degree higher than that of the right. In patients with phlegmasia the elevation of the temperature of the effected leg is from one to four degrees above normal. It reaches maximum with the height of the disease and continues from twenty-five to forty-five days. In cases in which there is any doubt of the diagnosis a test of the temperature of the leg will settle the matter.

**Treatment of Postpartum Hemorrhage.**—E. Schwarzbach (*Munch. med. Woch.*, Feb. 8, 1910) describes his method of tamponing the uterus for postpartum hemorrhage. It should be used only temporarily until contraction can be obtained by ergot, massage, and other means. He puts in place a conical, metal speculum so as to bring the mouth of the uterus into view, and then, holding the cervix steady with a forceps, pushes sterilized gauze into the uterus until it is filled, and hemorrhage ceases from pressure. Thus performed, the tamponade of the uterus is aseptic, painless, and may be done without assistance when necessary. After cessation of the hemorrhage has been brought about adrenalin injections, uterine compression, or total extirpation may be practised at leisure.

**Genital Prolapse a Result of Late First Labors.**—M. Fetzer, (*Munch. med. Woch.*, Jan. 11, 1910) endeavors, from the records of the Tübingen University Clinic, to show that prolapsus uteri does not often occur after labor in young women with the first child, but that when the first birth is delayed until after the age of twenty-five, the chances of prolapsus increase, and after thirty they grow rapidly greater. Genital prolapse, then, is a penalty for delaying marriage and child-bearing until late in the life of the genital organs.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Treatment of Salpingoophoritis, Uterine Fibromata, and Scleroses by the Ultra-penetrating Rays of Radium.**—Henri Cheron (*L'Obstét.*, Nov., 1909) says that radium treatment is effective in all cases of chronic annexitis. But we should make this important reservation as to its use, that it should be rejected in cases in which there are large collections of pus, accompanied by a serious general condition necessitating immediate operation. These collections should be opened and the tubes removed. In uterine sclerosis and fibroma the use should also be limited to those cases which can be affected by the action of radium on the ovary. When it is desirable to maintain the ovarian function the rays

cannot be used, since they cause sterility. The technic should be simplified as much as possible; small tubes should be used wrapped in tarlatan so as to intercept the secondary rays. The rays to be used are the gamma and beta rays; bromide and sulphate of radium are to be used. The ultra-penetrating rays are those needed for treatment; with a composite ray the effects would not be sufficient, or radium dermatitis might be produced. In cases of ovarian and annexial disease operation should not be considered the only resource; the radium rays should first be tried; they are perfectly harmless and often very effective. Fibromata of small size, and all cases of uterine sclerosis should be submitted to the radium treatment before operation. Only when this means has failed should a surgical operation be undertaken. In fibromata that have not decreased after an early menopause, and that are giving troublesome symptoms, operation is justifiable. The treatment is easy, harmless, and efficacious when properly applied, and is characterized by rapid amelioration of symptoms. It may be applied in working women who cannot be put to bed or give their time to operations.

**New Method of Treatment of Metrorrhagia.**—Maurice Pollosson (*Lyon med.*, Dec. 19, 1909) advocates the use of a compression forceps in obstinate cases of metrorrhagia, the pressure causing a clotting within the uterus, by the closure of the cervical canal, which soon stops the bleeding. For this purpose he has devised a forceps which is elastic and holds the cervix firmly. Each blade terminates in two hooked points which grasp the cervix. This may be applied with a round or valvular speculum in place, or without either of these instruments. It may be allowed to remain in place up to forty-eight hours without doing harm. Another instrument that may be used is a sort of uterine clamp forceps. The author gives histories of two cases treated by himself, one of fibroid of the uterus, in which the pressure gave no pain and the hemorrhage ceased, the forceps remaining in place three days. Another was a case of excessive hemorrhage at a menstrual period. There was no return of hemorrhage at the next period, the amount of flow being normal. Ten other cases are recorded. Most of these cases were fibroid tumors. No pain was caused. The patient remains quietly in bed while the forceps are in place. No reflux of blood into the peritoneum, uterine colic, septic infection, or any disagreeable symptom occurred. The procedure is not applicable to puerperal hemorrhages. In most cases it can be only a temporary measure preceding operation, but in a few it gives a permanent cure.

**Electric and x-ray Treatment of Fibromata and Uterine Hemorrhages. Ovarian Atrophy.**—Foveau de Courcelles (*Gaz. de gyn.*, Jan. 15, 1910) says that starting with the idea that the x-ray acts on cancers and that some fibromata develop into malignant tumors, he applied the x-ray to such patients when operation was refused. His results were regression of the tumors and suppression of hemorrhage. In one hundred cases treated

with  $x$ -ray and electricity he obtained improvement, for the most part with early menopause. He prefers radiotherapy to electrical treatment because it is painless, active, hemostatic, and acts through the clothes, although with feeble intensity. By the use of the  $x$ -ray we may obtain a cessation of the menstrual flow, and diminution of the pain of myoma at the same time that the hemorrhage is stopped, and may also combat the hemorrhages that accompany the menopause. In all sorts of menstrual troubles radiotherapy is useful, and sometimes it causes sterility at the same time. This is more easily accomplished in women about the menopause, while in younger women it is less successful. In young unmarried women the  $x$ -ray should be used with great caution for the relief of menstrual difficulties.

**Metastatic Oophoro-salpingitis.**—J. Okinczyc (*Ann. de gyn. et d' Obst.*, Jan., 1910) says that there are several ways in which infection may reach the ovary and tube; by ascending the canal, in primary metritis; by contiguity from the peritoneum, intestine or appendix; by the lymphatics, and by descending infection from the blood. Bacteriological examination of the diseased ovary is of little value. Long after the disease sterility acquired from infection may show itself as a result of secondary infection from the uterus or intestine, communicated by adhesions. We must generally accept as the origin of the condition an isolated, primary oophoritis, unilateral, and either parenchymatous or follicular, the mucosa remaining normal. The rupture of follicle, causing small hemorrhages gives a soil that is favorable for the growth of germs communicated from a general septicemia. Such a septicemia has been known to cause oophoritis in many of the infectious diseases. Those mentioned in this rôle are scarlatina, measles, small-pox, mumps, tonsillitis, typhoid fever, pneumonia, influenza, rheumatism, and other infections. Of chronic infections causing it, tuberculosis and syphilis are the chief. During the course of one of these diseases an attack of severe pain occurs in the ovarian region, and a more or less severe localized peritonitis follows. In the cases of pure salpingitis the infection comes by ascent from the uterus or by the lymphatics in the course of acute diseases.

**Peritonitis by Rupture of Pyosalpinx.**—Lamouroux (*Arch. gén. de Chir.*, Jan., 1910) discusses the occurrence of peritonitis following the rupture of pyosalpinx. The pus generally collects slowly, the walls meanwhile becoming thickened and sclerotic. They may be stretched almost indefinitely; but if they are pulled upon, as happens after confinement, by the contraction and involution of the uterus, they are very frequently torn, the result being a sudden attack of generalized peritonitis which is rapidly fatal. Lawson Tait said that 50 per cent. of women who have salpingitis are menaced with sudden death from peritonitis on account of sexual excesses, fatigue, and sudden efforts. Out of eighty-seven observations collected by the

author, forty-seven were operated on by laparotomy, of whom twenty-seven were cured. All the patients treated without operation died. The pulling down of the uterus during gynecological treatment or operation may cause rupture. After labor rupture occurs, but rarely during pregnancy or labor. The tubal rupture occurs on the peritoneal surface of the tube; sometimes it is a fissure, at others the perforation is very small; again it may be irregular as if a slough has formed. The perforation is generally single. The rupture is so small, the amount of pus so small, the location such that it is unlikely to be the result of bursting from pressure. The immediate cause is generally some slight exertion. The important consideration is the alteration in the wall of the tube; it may be ulcerated or a small abscess may form in the wall. A tube with chronic infection, which has been increasing slowly in size, may become suddenly acutely infected and rapidly become distended. Labor may reawaken a salpingitis that has been quiescent. Massage of the uterus or abdomen is dangerous in such cases. The symptoms are those of a sudden general peritonitis; pain, vomiting, profound intoxication, algidity, and early death if operation is not performed. To wait destroys all chance of life for the patient.

**Displacements of the Ovaries.**—C. H. Stratz (*Zeit. f. Geburts. u. Gyn.*, Bd. lxxv, H. 3) finds that the cause of displacement of the ovary in various directions is a predisposition from abnormal length of the ligaments and weakness and the extraligamentary position of the ovary. The immediate causes are mechanical insults, trauma, changes in the topography of the neighboring organs, overfilling and long distention of the bladder and rectum. The interruption of the circulation from displacement causes edema of the organs and often hemorrhage into them. The author gives histories of five cases observed by him. Secondary inflammation takes place. There is a congenital shortening of the upper ligaments, or lengthening of the *ligamentum proprii ovarii*, and the *ligamentum suspensorium*. The ovary may be displaced downward, forward, or upward. Descent is most frequently seen. The clinical symptoms generally come on acutely with pain, changes in menstruation, and signs of peritoneal irritation, such as nausea, vomiting, and flatulence. The diagnosis may be made by bimanual examination, which shows that the ovaries are absent from their normal situation, and present in another location. The pain usually occurs in the premenstrual period, is located especially on one or the other side, and is followed by swelling of the ovary. Treatment consists of rest in bed, ice to the abdomen, and sedatives in the acute stage; later, bimanual reposition.

**Ovarian Endothelioma.**—Piera Ligabue (*Il Policlinico*, Jan. 1, 1910) says that endotheliomata are somewhat poorly known among malignant tumors, not having been thoroughly studied. They may occur in any of the organs that are affected usually by

malignant tumors. They greatly resemble alveolar and fibrous sarcomata, and may be mistaken for them. The author details a case of endothelioma of the ovary the size of a child's head operated upon by him. Examination of the removed tumor showed that it was composed of fibrous tissue passing into a cellular tissue; the lymphatic spaces were filled with large cells of the appearance of endothelium, appearing sometimes singly, sometimes in small groups, always situated near the periphery of the growth; in other parts the stroma had a reticular aspect, within which were found epithelioid cells arranged in columns and chains. In some parts the cellular elements were much developed, so as to compress the connective tissue stroma. There was also a cystic zone with membranous walls. These tumors vary very greatly in their composition and formation in different parts. This tumor had probably developed from a fibroma of the ovary, which had arisen from the lymphatic spaces of the connective tissue. We cannot estimate the value of heredity in these tumors. They have been found at all periods from infancy to old age. They are most frequent between the ages of forty and fifty. There is nothing in their structure that will cause menorrhagia or metrorrhagia. Ascites, pain, and edema of the legs may or may not be present. These tumors are rarely bilateral. They may be extensively adherent to other organs. Their capacity for metastasis is limited. The development may be slow or rapid. Precise diagnosis before operation is impossible. The prognosis is bad, removal being the only treatment possible.

**Treatment of Cancer of the Cervix Uteri by Abdominal Hysterectomy and Pelvic Removal.**—Victor Pauchet (*Arch. prov. de chir.*, Jan., 1910) says that cancer of the cervix may be evacuated by abdomino-vaginal colpo-hysterectomy. In this case the preparation takes eight days; injection of peroxide of hydrogen; touching with iodine; fruit diet; intestinal lavage; the night before operation, curetting away of the cancerous masses and tamponage with iodine, followed by fulguration. The operation consists of a circular incision about the vulva with dissection of the vagina upward for four or five centimeters, and closure of the vagina like a purse. The abdominal procedure consists of a median laparotomy, ligation of the ovarian vessels, round ligaments, hypogastric vessels, retrovesical and prerectal section of the peritoneum, and extirpation in mass of the uterus and vagina, followed by removal of the glands. This method gives excellent immediate and remote results. Its only inconvenience is the possible tearing of the lymphatic vessels filled with cancer cells and the inoculation of the wound with them. On account of slowness of the operation the author advocates confining the operation to the abdominal route, cutting off the vagina three or four centimeters down from the cervix. The operation includes incision of the abdominal wall, liberation of uterus and adnexa, ligation of round ligaments and ovarian vessels, and of the

hypogastriacs, the ganglionic masses being crowded back, incision of the anterior and posterior culs-de-sac, incision of the vagina, vaginal drainage, and closure of the pelvic basin. Cystoscopy aids in making a prognosis, for an abnormal vascularization or a folding of the vesical walls indicates adhesions.

**The Adiposo-Genital Hypophyseal Syndrome.**—P. E. Launois and M. Cleret (*Gaz. des hôp.*, Jan. 18, 1910) say that in the adiposo-genital syndrome which accompanies lesions of the hypophysis there are three general elements; the first is generalized adiposity, superficial as well as deep. The fat accumulates on the surface, the thorax and abdomen are pendulous, the thighs are immense, the breasts great pendulous masses, the pubis is immensely enlarged, and there are deep purplish sulci through the fatty masses. The youth is pot-bellied like the child; internally the omentum and mesenteries are filled with fatty masses. Genital dystrophy is the next symptom; in boys there is testicular atrophy, and the small genitals are lost in the masses of fat; the breasts are large in size. In young girls menstruation is established late and remains irregular. In the adult woman the menses are irregular and end early in life. Frigidity is present in both male and female. The third factor is the tumor of the hypophysis; symptoms which render it probable are those of a cerebral tumor, including pressure symptoms; headache, vertigo, cerebral vomiting, loss of memory, torpor of intellect, contractures, trismus, and optic neuritis. Psychoses, polyuria, or glycosuria may be present. An x-ray examination showing the presence of the tumor verifies the diagnosis.

**Cystotomy in the Female.**—A. Grandjean (*Gaz. de Gyn.*, Feb., 1910) says that cystotomy in woman should be made use of only in cases of chronic cystitis that have resisted all other forms of treatment; in such cases it may bring about relief of the painful symptoms, and finally a cure of the difficulty. It is useful in four forms of cystitis: nervous cystitis allied to hysteria; tuberculosis of the bladder; chronic infections of the upper urinary passages; chronic cystitis without infection of the upper urinary tract. In the first form it is only necessary to convince the patient that she need not urinate continually. In tuberculous cystitis, if early in the disease, there is hope of an ultimate cure, and it allows of proper application to the bladder. In incurable cases the relief that it brings is of value. In simple chronic cystitis without infection of the upper urinary tract cure is rapid. In infected cases with hypertrophy of the bladder walls it is of great value. The fistula may be closed easily when it is no longer useful.

**Treatment of Cancer of the Uterus and Vagina with the Ultra-penetrating rays of Radium.**—Henri Chéron and Rubens Duval (*Bull. de la soc. d'Obst. de Paris*, Dec., 1909) speak with confidence of the clinical results of treatment of cancers of the uterus and vagina by the use of the ultra-penetrating rays of radium. By its use they obtain a symptomatic cure, and all

that is left of the tumor is a small amount of hardened tissue. The authors publish five cases treated by them, three of uterine, and two of vaginal cancer. In all these cases all the functional manifestations of the tumor disappeared so that the patients considered themselves cured. The neoplasms appeared to have been destroyed; pain, hemorrhage, and leukorrhea all ceased. The lessening of pain began a few days after treatment commenced, and in about three weeks pain had ceased entirely. Hemorrhage sometimes increased for forty-eight hours, and then gradually decreased. There remained neither metrorrhagia nor menorrhagia. In some cases menstruation continued because the sclerosis produced by the first application was so great that the treatment could not be applied to the interior of the uterus. The inflammatory element of the growth disappears, ulcerations take on the appearance of healthy wounds, then a new sclerotic tissue is formed. In the vagina vegetations are destroyed, sloughs disappear, and healing of ulcers occurs by sclerosis, new epithelium covering their surface. The examining finger finds sclerotic masses instead of friable newgrowths. The cicatrix is thin and supple.

**Treatment of Advanced Uterine Cancer.**—When uterine cancer has passed beyond the boundaries of the uterus to such an extent that palpation can readily show that it has done so, H. J. Boldt (*Jour. Amer. Med. Assn.*, 1909, liii, 1883) advises intervention with a large curet and cautery, unless the vagina is extensively infiltrated by the growth. All readily breaking-down structure is rapidly excavated with the spoon. The bleeding is stopped with an extra large dome-point electrode of a galvanocautery, so that it can be done more rapidly. To avoid burning the vulva and the vagina, the writer uses a speculum of metal with a double hull, cooled by a continuous flow of cold water through the dividing space. In shape it is like the old style Ferguson speculum. The burning or charring is done very thoroughly, so as to leave practically only an outer shell of the uterus. It is well to cool the cavity which is being charred, by inserting at intervals, through the speculum, small pieces of cracked ice and drying the uterine surface before reapplying heat. After the eschar has separated, it is best to apply tincture of iodine to the uterine cavity every second day until the organ has contracted, or to use acetone as advocated by Gellhorn. The cauterization should be repeated whenever bleeding or signs of softening of the diseased uterus is observed. The use of vaginal douches should be prohibited. The pain that is caused by pressure of the tumor on nerves must be combated with narcotics. Of these, opium and its alkaloids are the only ones that give entire satisfaction.

W. B. Chase (*same*) advocates the use of the thermocautery as palliative treatment of inoperable cases. He protects the vaginal surfaces from the injurious heat of the cautery by the use of strips of asbestos paper of proper size and shape. Where large

areas of ulceration are present the curet may first be used to advantage. This is likely to result in pretty active hemorrhage. This bleeding is usually easily controlled by the application of pledgets of cotton applied with pressure, first dipped in dilute acetic acid, usually of half strength, or by the use of the adrenalin chloride. After this, the cautery knife is to be applied at a dull red heat until the surfaces are thoroughly charred. The after-dressing consists of 5 per cent. iodoform gauze, reapplied daily, after cleaning the parts with liquor cresolis compositus or permanganate solution douches. Daily vaginal douches with permanganate of potassium or compound solution of cresol are the best antiseptics.

**Cancer of the Female Breast.**—J. N. Jackson (*Med. Rec.*, Dec. 4, 1909) states that almost without exception the finding of a tumor in the breast is the first sign that calls the patient's attention to the existence of disease. Palpation is the most reliable means of diagnosis. It is essential that the flat of the fingers and palm of the palpating hand should be pressed gently down upon the breast and the tumor thus defined between the hand and the 'unyielding chest-wall. Though the nodule is small its stony hardness is characteristic of cancer. Multiple tumors in the breast speak against malignancy. Early adhesion to the skin or pectoral fascia. The former may be shown by the occurrence of slight dimpling of the skin when the breast is moved on the chest-wall. Minute comparison of the two breasts is essential. Retraction of the nipple is significant if unilateral. Enlargement of axillary glands is conclusive only if inflammatory affections, tuberculosis, etc., are excluded. The literature reviewed shows that at least 90 to 95 per cent. of all tumors of the breast are malignant and no possible intelligence can determine which of the remaining 10 per cent. will remain benign. There is no known cure for any tumor of the breast, benign or malignant, except through surgical removal. From 25 to 50 per cent. of cases of breast cancer are permanently cured by radical surgical removal. With early diagnosis this percentage could be raised to 80 per cent. Every tumor of the breast, therefore, should be considered malignant and treated as such at the very first moment of its detection, unless incision has proven it benign, in which instance local excision should at least be insisted upon. To trifle with tumors of the breast is practically nothing short of criminal.

# DEPARTMENT OF PEDIATRICS.

## ORIGINAL COMMUNICATIONS.

### THE ROLE OF WALDEYER'S LYMPHATIC CHAIN IN THE ECONOMY OF HEALTH AND THE DISSEMI- NATION OF DISEASE.\*

BY

CLAUDE G. CRANE, M. D.,

Associate Laryngologist to Brooklyn Hospital; Assistant Surgeon, Ear Department,  
Brooklyn Eye and Ear Hospital, etc.

THE lymphoid tissue found in the throat and known as the faucial, lingual, and pharyngeal tonsils, presents a large field for study and original research work. The literature of the last few years has been well supplied with much in the way of original investigation, and the unusual activity in this field affords ample evidence that the problems here presented have not been solved to the satisfaction of most scientific investigators. The views of some writers as based on original work are quite extreme and their deductions not always logical, while others seem willing to accept some things on very little evidence. On the other hand, those writers who discredit whatever evidence they are not able, or at least do not, disprove, seem to be equally in error. When one reviews the literature he finds such a diversity of opinion that he must of necessity make his own deductions and in conformity with his own particular clinical experience or investigation.

I shall not attempt a review of the literature of the subject, as that would not be possible in the time allotted to the reading of the paper, but will briefly touch upon the main points of interest involved in a large subject.

A brief reference to the anatomy of that part of the lymphatic system concerned will make clear the reason for some of the statements to be made later on.

The tonsils, faucial, lingual and pharyngeal, are composed of lymphoid or adenoid tissue, and differ in no respect from lymph-

\* Read before the Brooklyn Pathological Society, May 12, 1910.

oid tissue found elsewhere in the body. Without going into the details of their histological structure, it is sufficient to state that the tonsils are composed of lymphoid tissue supported by a connective-tissue framework or trabeculae or reticulum. The pharyngeal lymphoid mass drains into the lymphatic glands of the superficial group; the faucial into the anterior superficial group below the angle of the inferior maxillary bone, and the lingual into the same group. Besides these three distinct groups of lymphoid tissue, the nasopharynx, pharynx, and fauces are well supplied with lymph nodules and a network of lymphatics. These all drain into their respective group of cervical lymph glands.

The superficial cervical glands drain into the deep cervical glands, and extending downward drain into the supraclavicular glands. A connection has been established between the lower group and those of the pulmonary pleura, as well as between the former group and the mediastinal glands. The mediastinal glands connect with the visceral and parietal lymphatic glands of the lungs. Thus we see that there is a direct lymphatic connection between the lymphoid tissue in the throat, composing Waldeyer's ring, and the lungs.

It is, of course, an anatomical fact that all of the foregoing groups drain respectively into the thoracic duct on the left side, and the right lymphatic duct on the right side. Thus we see established a direct connection with the general circulation of the body.

The foregoing brief description is sufficient to indicate the direct connection between the lymphatic chain of the throat with the lungs as well as with the general circulation.

It is well known that the lymphatic stream flows sometimes in one direction and sometimes in another. With this and the anatomical connections in mind we can readily understand that there is no part of the body not susceptible of infection through the lymphatic system, and with the lymphoid tissue of the throat, as the portal of entry.

Much has been written regarding the essential function of the lymphoid glands of the throat. It is conceded by practically all scientific investigators that there is a distinct function inherent in this group of lymphoid tissue. The only divergence of opinion consists in the manner in which these structures perform the functions assigned to them by nature. Does the lymphoid tissue manufacture an antitoxin which through the lymphatic system gives systematic protection and immunity? Or

does the protection consist entirely in a local resistance to the invasion of infection?

I believe the latter to be the real situation as it is supported by clinical evidence too strong to dispute. It is with the local barrier offered that we will confine ourselves. How does the lymphoid tissue act, and does it have a more or less fixed period of activity followed by a period of atrophy and inactivity? For convenience, we will apply the term tonsil or tonsils to signify the faucial, and adenoid, or adenoids, to signify the pharyngeal lymphoid tissue. What is said of either applies only to a less extent to the lingual group.

At birth the tonsils and adenoids are fully developed and functioning. This very evidently means that nature intended that such should be the case. What is this function? It is very evident that in infancy and in early childhood the system is more susceptible to infection—less resistant—than in later life. It is during this period, before any degree of natural immunity is developed, that some provision should be made by nature to take care of this lack of immunity until such time as the organism has developed sufficient resistance to infection to no longer need this protection. This view is supported by the fact that these glands are fully developed at birth and functioning, that they continue to develop, reaching full development about the sixth or eighth year when they normally begin to atrophy; and at about the twelfth or fourteenth year of age, they no longer exist as functioning glands. This is, of course, not true when they have become the seat of disease. When they are found after this age, large and of full size, it is very clear evidence that they have been the seat of disease, and their present condition a resultant.

What is the manner in which these lymphoid glands protect the organism from invasion of bacteria or their toxins? This is the disputed question. A number of theories have been advanced; well-known investigators like Wright, Wood, Goodale, Walsham, Williams, and others firmly believe that such a function exists, yet differ in their explanations of the particular manner in which it is brought about.

It has been shown that carmine injected into the tonsils readily passes into the parenchyma of the glands while bacteria remain within the crypts. Butter also readily passes from the crypts into the parenchyma. It has been suggested that bacteria in milk would more readily pass into the tonsil because of the butter experiment.

The free surfaces of the tonsils are covered with epithelium which infolds unto the crypts. As we get deeper into the crypts we find the layers of epithelium become fewer until near the bottom we find only a single layer of flat cells with here and there a space entirely unprotected by even this single layer of epithelium.

It is thus easy to understand that any foreign matter can easily pass from the crypts into the gland proper. Why does the carmine red enter so readily while bacteria do so not at all except when present in overwhelming numbers or when the lymphoid tissue has become so altered by repeated inflammatory changes as to no longer offer the barrier provided by normal lymphoid tissue? That we constantly find within the crypt large numbers of pathogenic bacteria and as often none whatever within the tonsil proper certainly indicates that healthy lymphoid tissue normally offers a barrier to bacterial invasion. It is not the epithelial lining of the crypts which is responsible. We must accept the protecting function of the lymphoid tissue found in the throat just as we must accept this same inherent function in lymphoid tissue formed elsewhere in the body. The fact that some of the crypts extend to the capsular surface and come in direct contact with the absorbing afferents of the cervical lymph nodes opens another channel for infection. Wright has spent a great deal of time and much hard work in attempting to explain the protecting function of the lymphoid tissue of the throat. It would seem from a review of his work that there is an inherent function which causes the lymphoid tissue to reject certain pathogenic materials as poisons and to absorb certain other materials as foods. The attempt to work this out in terms of electro-dynamics has so far not been successful. However this may be, it is a fact beyond dispute that, as a result of clinical observations and scientific investigating, the protecting function of the lymphoid tissue of the throat has been satisfactorily proven and is now accepted.

The foregoing is not offered as proof but is merely intended as a brief reference, since to detail all the proofs would prolong this paper beyond the required length.

When the lymphoid tissue atrophies, as it normally does, it no longer functionates, as it is no longer needed. When it has become the seat of disease before the atrophy has taken place, we have certain results which will be briefly touched upon. When this occurs the physiological functions are interfered with

in whole or in part and we have instead a diseased focus to contend with. We lose the advantages of normal functioning tissue and have added the disadvantages and ill effects of a diseased focus. It is then and then only that the lymphoid glands of the throat act as portals of entry for localized, adjacent and systemic infection. It is this phase that we wish briefly to consider.

Beginning at birth the pharyngeal lymphoid tissue may become enlarged, and this of course means diseased. We have quite frequently in infancy and early childhood an acute infection of the adenoid tissue similar to an acute infection of the tonsils. This is very often never thought of and consequently some other reason is assigned for the patient's temperature and concurrent symptoms. This acute infection may take place in early infancy and as a result the lymphoid tissue here becomes infected and thereafter remains a constant source of infection. The infection may be of the streptococcus, staphylococcus or tubercular type. Enlarged cervical glands may result, infection in them being similar in character to that of the adenoid tissue in the pharynx. Exclusive of the acute exanthemata this is *the* cause of middle-ear infection in infancy and childhood, and even in the acute exanthemata it is probable that the adenoid tissue becomes infected first. This is also the cause of repeated attacks of acute exudative inflammation in the nasal cavities. The diseased adenoid may not be sufficiently large to cause respiratory obstruction, and it is because it does not do so that it is so often overlooked.

Just here it might be well to answer the question so often asked: When is the child old enough to have his diseased or enlarged adenoid tissue removed? The child is always old enough. It is not a matter of age, it is a matter of removing pathologic tissue when present and diagnosed as a source of ill health locally or systematically. In adult life we sometimes find diseased adenoid tissue which is an active focus for infection. The age factor does not eliminate it.

During the past winter there have been a considerable number of cases reported of streptococcic infection of the throat with resulting systemic invasion:

As illustrating this class of cases, I will briefly report one. M. C., a lawyer, about thirty-eight years of age. On March 14, 1910, I was called to attend him because he had a sore throat. History: Has had a sore throat for four days, high fever, ached all over; condition growing worse. Home remedies had been employed without avail. Has had malaria and at times what

he called rheumatism; does not use alcohol except on rare occasions.

*Examination.*—Temperature 103, pulse 120. Throat, marked congestion. Swelling very marked involving both pillars, soft palate, uvula, extending well into the hard palate, pharynx, epiglottis, and base of tongue. Larynx not involved. No patches nor localized areas of infection. Tonsils involved to some extent; tongue coated; very unusual amount of mucous secretion, patient constantly expels large quantities of ropy mucus.

March 15.—Throat presents the same picture, slightly worse; left sternomastoid muscle swollen and tender. Temperature 103.4. Pulse 120.

March 16.—Worse; temperature same; pulse 120; congestion of entire throat more marked and mucous secretion more abundant. Right sternomastoid swollen and tender.

March 17.—Left sternomastoid muscle subsiding. Temperature 100; feels better and much less mucus secreted; less congestion and less swelling. Entire condition seems to be subsiding. Right sternomastoid seems still swollen and tender.

March 21.—Throat clearing up; left sternomastoid practically clear of swelling and tenderness; right, much better. Temperature 99.2; general condition very much improved and throat and neck seem to be getting well. Complains for first time of pain in right thigh. Examination shows some tenderness localized about knee externally.

March 22.—Throat and neck improving continually, leg much worse. Swelling and tenderness extend to knee. Temperature 103. Pulse 120.

March 23.—Leg condition getting worse, although he has had treatment, local and general, with absolute rest; swelling above and below the knee 6 inches. Temperature 103.8. Pulse 130 and irregular. Patient looks ill and septic. Diagnosis, infection of the leg. Secondary through the throat, through the lymph channels.

March 24.—Knee and leg much worse and patient shows evidence of sepsis. Some mental disturbance. Temperature 103.8. Pulse 130.

March 25.—Suggested consultation, explaining that condition of leg was not improving and that I would prefer transferring the case to a surgeon. Dr. John Parrish was secured at once. We thought it advisable for a surgeon to see him, and Dr. Brinsmade was called. My attendance ceased at this time.

March 28.—Dr. Brinsmade had patient removed to the Long Island College Hospital, and on March 29, leg was opened under a general anesthetic. Diagnosis of streptococcic infection, secondarily to a similar infection in the throat.

Subsequent history of the case. Since first operation has had leg opened several times; patient profoundly septic. Has had the benefit of the best of care, and Dr. Van Cott has used his polyvalent serum.

May 4.—Saw leg while being dressed and it presented as bad an infection as I have ever seen. Patient profoundly septic and semiconscious.

May 25.—I learned from Dr. Brinsmade that the patient was holding his own and he thought he would get well, inasmuch as he had retained his ability to take plenty of nourishment. He had been using an autogenous serum, but did not see any special benefit from it. This had not been used until quite late, however, after the infection was well-established and patient's general condition very bad.

The history of this case well illustrates a class of cases which call for early diagnosis and the institution of vaccine treatment. The importance of taking cultures of the throat in all acute infections cannot be too greatly emphasized. It is not fair to the patient to depend entirely upon the clinical picture. While it is true that an accurate diagnosis can in most instances be made by the observer, it is well to get the habit of taking cultures in order to avoid an occasional error. Stock vaccines may be employed pending the preparation of a hematogenous vaccine. With an acute infection of the foregoing description established and proven as a fact, it is fair to assume that any form of an acute infection of the lymphoid tissue of the throat may result in systemic invasion and the establishment of infection in any part of the body. When we consider the opportunity for ready absorption through the lymphatic and venous systems we must accept the theoretical possibilities, and when we are constantly confronted with the clinical picture to substantiate it, what excuse is there for skepticism?

A case has been reported of acute streptococcus tonsillitis, followed by an acute streptococcic appendicitis, streptococcus in pure culture of the same strain being found in tonsils and appendix. The fact that the appendix contains a considerable amount of lymphoid tissue strengthens the conclusion that the infection in the appendix was secondary to the infection in the tonsil. It matters little where the initial focus may be, the picture is much the same. There is this difference in the throat, we have a chain of lymphoid tissue so placed as to come in direct contact with every form of infection contained in the air and in the food.

The relation between acute and chronic rheumatism and acute and chronic tonsillitis is a matter of interest to every practitioner of medicine. We do not know the exact nature of what is known as rheumatism; that it is an infectious disease due to the invasion of pathogenic bacteria or their toxins, or both, is

now accepted by most men. That it is a streptococcus infection is believed by many, although the particular strain of streptococcus has not been determined. It may very well be that what we call rheumatism is not always the same kind of infection. There may be a number of bacteria which may be responsible for the great variety of symptoms which go to make up the varying clinical picture of rheumatism, acute or chronic. Note the symptoms of acute tonsillitis of the streptococcus type and we have oftentimes symptoms simulating some of the manifestations of acute rheumatism. So many cases of acute rheumatism accompanying or following acute tonsillitis have been reported that the inference seems plain. We see patients who have never had any manifestations of acute rheumatism become victims of acute tonsillitis and soon after develop the clinical picture of acute rheumatism, and thereafter have repeated attacks associated with tonsillitis. That we see the symptoms of rheumatism subside and never afterward return following the removal of the septic foci in the tonsils is also well known. We find practitioners have for years used drugs in the treatment of acute tonsillitis which they used also in treating rheumatism. The same holds true for chronic forms of rheumatism. We have diseased tonsils acting as a constant focus for the absorption of toxins. Now and again we have an exacerbation of the local focus followed by an exacerbation in the rheumatism. The foregoing is not offered as scientific proof of the causal relationship between rheumatism and a diseased condition of the lymphoid tissue found in the throat. It is a clinical picture, however, which is certainly more than suggestive.

We frequently see children with a well-developed chorea improve very markedly and in some cases get entirely well of their chorea following the removal of enlarged and diseased tonsils and adenoid. This has been true in cases where all other methods of treatment have apparently failed. Whether this is due to the removal of a diseased focus of infection acting as an etiological factor in the chorea or whether it is due to the improvement in the general nutrition and health of the patient following the operative procedure, is in the light of our present knowledge an open question. The relation between chorea and rheumatism, or at least the association of these two conditions, together with the endocarditis accompanying both, presents another link in the chain of clinical proof of the close connection between these apparently allied conditions. It is

suggested that much may be done in the near future along bacterial lines to prove or disprove a clinical picture of a common occurrence, as well as provide more suitable vaccine treatment.

The question of the relation of tuberculosis of the lymphoid tissue found in the throat to pulmonary tuberculosis or to tuberculosis elsewhere in the body, offers considerable opportunity for study. To establish this relation it is necessary to prove tubercular lesion in the tonsils or that tubercle bacilli may enter through the tonsil without causing a localized area of tuberculosis.

In the course of investigation of a very considerable number of tonsils, they have been found to be the site of tubercular lesions. Tubercular and giant cells have been found in the tonsil tissue. That the tubercle bacilli may pass through the tonsil tissue without causing local tubercular lesion is overlooked. With a tubercular focus in the tonsils it is very evident that we have very frequently to do with a similar infection in the cervical glands into which the tonsils drain.

It has been a very common experience to remove tubercular glands of the neck without finding the tonsils to present on gross appearance any tubercular lesions. It has been found that the tonsils which on gross appearance did not present tubercular lesions did present such lesions under the microscope.

It is a common experience to find large cervical lymph nodes which have been diagnosed as tubercular subside and completely disappear subsequent to complete removal of the diseased tonsils. We find an exacerbation of the tonsillar infection is frequently accompanied by an exacerbation of the cervical adenitis. That a tubercular affection of the cervical lymph nodes may extend to the parietal pleura, through the lymphatic connection already mentioned, or to the mediastinal glands and thence to the parietal and visceral pulmonary glands is to my mind not only possible, but probable.

About two months ago at The Brooklyn Hospital we began to examine the tonsil and adenoid tissue removed from patients operated upon. Up to the present time, we have in the course of examination tonsillar and adenoid tissue from about 150 cases. It was hoped that we might be able to make a preliminary report at this time, but the work has proven to be so time consuming that the report will have to be postponed until a later date.

We may not be able to present anything new, but we hope to be able to do so. If as a result of our investigations and examinations we succeed only in corroborating or controverting the

conclusions of others, the time will have been well spent. The object of these examinations will be to determine the character of tissue changes, the presence or absence of specific bacteria or specific lesions in the tonsils. This field offers a wide scope and we expect to enlarge the work as different lines of thought suggest themselves.

It is fully appreciated that the paper has not covered the subject stated by the title, but it has been my object to introduce some thoughts in the hope that they will stimulate active investigation.

119 HALSEY STREET, BROOKLYN, N. Y.

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## DIPHTHERIA IN CHILDREN.

A STUDY BASED ON TREATMENT OF EIGHT HUNDRED CASES.\*

BY

E. MATHER SILL, M. D.,

Attending Physician at the Good Samaritan Dispensary, Children's Department. Lecturer on Diseases of Children at the New York Polyclinic Medical School and Hospital.

DIPHTHERIA is one of the most insidious and treacherous diseases we have to deal with, and on account of the great divergence of its clinical manifestations, even those with the widest experience cannot expect to diagnose every case by clinical means alone; in fact, it is possible so to do only in the more typical cases. On the other hand, in many cases which on culture growth show bacteria morphologically identical with the Klebs-Loeffler bacillus, the clinical aspects alone would not indicate or even lead us to suspect diphtheria. It is from my studies along this line that I have been prompted to write this paper.

The cases I here report were all verified by bacteriological culture growth. My figures cover a period of eight years, the cases being endemic, they also show diphtheria was most prevalent in this series during February, March, April, and June, the most cases occurring in March and fewest in January. It seems reasonable to believe that children are more susceptible during the spring months on account of the prevalence of catarrhal affections at that time of the year and also from the fact that they are less resistant on account of a lowered vitality at that season.

I here report the frequency of diphtheria of the nose, throat, and larynx at the different ages.

Of 757 cases under ten years of age, there were 521 pharyngeal, of which 24 were one year and younger; 116 from one

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to three years; 76 from three to five years; and 265 from five to ten years.

There were 166 nasal cases, the youngest being five weeks old; 22 were one year and under, 69 from one to three years, 32 from three to five years; and 43 from five to ten years.

There were 70 laryngeal cases: 7 one year and under; 35 from one to three years; 9 from three to five years; and 19 from five to ten years.

There was one case of diphtheria of the eyelid in a child five years of age, and one case where diphtheria bacilli were found in the discharge from the ear.

Thus it will be seen that the order of frequency is pharyngeal, nasal, laryngeal.

Pharyngeal diphtheria in this series was the most frequent at all ages, more cases occurring, however, between the ages of five and ten years. More cases of nasal diphtheria occurred between the first and third years, but comparatively and absolutely the most cases of laryngeal diphtheria occurred between the first and third years.

One hundred different cases of sore throat and nasal discharge were examined, clinically, bacteriologically by culture growth, and also by direct smears on slides from the throats.

Of these there were thirteen cases of clinical pharyngeal diphtheria, all of which on culture growth were reported positive Klebs-Loeffler from the Board of Health; the direct smears on slides showed four to be streptococcic, four staphylococcic, one diplococcic, two diphtheritic, one large diplococci (this case was diagnosed as scarlet fever and proved to be such later).

There were eight cases of nasal discharge, which were suspicious, culture growth showed one to be positive Klebs-Loeffler, and seven negative Klebs-Loeffler by the Department of Health. Direct smears on slides showed five to be streptococcic infection, one diplococcus, and two diphtheria. There were three cases of laryngeal diphtheria, and all three gave positive Klebs-Loeffler culture reports from Board of Health. One slide showed diphtheria and two streptococci.

There were 76 cases of clinical tonsillitis, and of these culture growth showed 67 to be cases with germs other than the diphtheria bacilli; 9, however, showed Klebs-Loeffler bacilli and were therefore considered to be cases of diphtheria.

We were able to diagnose three of these cases by direct smear on slides as cases of diphtheria, the same as the culture growth.

Two other cases were thought to be of diphtheria from examination of direct smear; culture growth, however, did not show the Klebs-Loeffler bacilli. Thus, although five cases were diagnosed as diphtheria from direct smear, culture growth only showed Klebs-Loeffler to be present in three, leaving six other cases of clinical tonsillitis, which culture growth showed to be diphtheria, but which we could not demonstrate as diphtheria by direct smear.

Of the sixty-seven cases of sore throat without the Klebs-Loeffler bacilli, the slides showed forty-eight to be streptococci, three large diplococci (scarlet fever cases), two diphtheria, seven staphylococci, five diplococci, two Vincent's bacilli.

It will be seen that we were only able to diagnose 23 per cent. or less than one-fourth of the thirteen positive cases by means of direct smears, but our clinical diagnosis corresponded exactly with the diagnosis from culture growth in the pharyngeal cases.

Of the eight cases of nasal discharge the direct-smear diagnosis corresponded with the culture growth, with the exception that by direct smear one case upon slide examination showed diphtheria bacilli, while on culture growth from the same case diphtheria bacilli were not reported.

Of the laryngeal cases the clinical and bacteriological diagnosis were both positive diphtheria, but we were only able to demonstrate diphtheria bacilli in 33  $\frac{1}{3}$  per cent. of the cases by direct smear from the throats.

I have not infrequently gotten reports from the bacteriologist of true diphtheria from cultures taken from an apparently normal throat and *vice versa* a negative report from a true diphtheria.

A case in point: a child nine years old with typical clinical diphtheria—with membranes on both tonsils and spreading to pharynx—10,000 units of antitoxin given and culture taken from the throat—bacteriological report negative. Child improved rapidly under serum treatment.

A culture was taken next day from the throat of her sister which appeared normal and the report came back true diphtheria.

I then took a culture from the throat of the first child whose throat had cleared of the membrane and obtained a report of true diphtheria. I might cite numerous similar cases.

This shows that one negative throat culture should never be relied upon if there is a membrane in the throat, it also shows that one should never wait for a report from the bacteriologist

before giving antitoxin, but give it at once in all suspicious cases. If it prove afterward to be a case of Vincent's angina or pseudo-diphtheria, no harm has been done by giving the antitoxin, and if true diphtheria the child will be well on the road to recovery; while if we wait for a positive report from the laboratory we are taking grave and unnecessary chances with our little patient which may result in a prolongation of the disease, serious complications, and not infrequently death.

If a direct smear shows Klebs-Loeffler bacilli we may be very sure the case is one of true diphtheria, but absence of the Klebs-Loeffler bacilli on direct-smear examination does not necessarily mean the case is not true diphtheria, and I believe it is safer for one of experience to rely on the clinical diagnosis and appearance of the throat rather than to go entirely by the smear examination.

One hundred and fifty-five cases of diphtheria were examined especially with the view of comparing the clinical aspect with the bacteriological findings. There were sixty-one cases of clinical pharyngeal diphtheria with membrane. Thirty-six of which the culture showed Klebs-Loeffler bacilli present. In twenty-five it was absent. There were seventy-two cases of clinical nasal diphtheria or a chronic nasal discharge which had lasted from a week to three months, forty-one of which showed Klebs-Loeffler bacilli present, and in four they were absent.

Of these 155 cases of clinical diphtheria there were ninety-five positive Klebs-Loeffler bacilli reports and sixty negative Klebs-Loeffler bacilli reports from the bacteriologist; or, in other words,  $61 \frac{1}{3}$  per cent. of these 155 cases of clinical diphtheria were positive Klebs-Loeffler, while  $38 \frac{2}{3}$  per cent. were negative. Some of these latter very likely on second or third cultures would have shown the Klebs-Loeffler bacilli to be present; many, however, were probably cases of Vincent's angina or pseudo-diphtheria. I find this report corresponds closely with that of Park and Beebe who found 40 per cent. of 5,611 cases of clinical diphtheria to be diphtheroid. Here again is the question of second and third cultures to be considered.

It was now decided to take cultures from cases of ordinary sore throat to ascertain how many of these harbored the diphtheria bacillus.

One hundred and twenty-seven cases were chosen of simple sore throat without membrane; of these fifty-nine showed positively the diphtheria bacillus with the first culture and in

68 it was not present. Thus 44  $\frac{3}{4}$  per cent. showed Klebs-Loeffler bacilli and were therefore classed as true diphtheria.

It is not an infrequent thing to find true diphtheria in the throats of apparently healthy individuals who have been in contact with cases of diphtheria, and, according to different observers, this varies from 40 to 50 per cent. in relatives living in the house and from 15 to 25 per cent. among physicians and nurses attending diphtheria cases. Few really healthy persons, however, harbor the germs according to Holm (Philadelphia). A peculiar thing about this is that antitoxin does not hasten the disappearance of the bacilli in these cases, but they are easily killed by local antiseptics.

It has been shown that about 1 per cent. of all children are diphtheria bacilli carriers, most of them being of a nonvirulent type of bacilli, the mere presence of the bacilli alone not being sufficient for the development of the disease. Sometimes, however, these bacilli carriers can communicate the disease in a virulent form, as has been demonstrated many times by Park and others and to my own satisfaction. Therefore no physician has a right to allow such cases to go unquarantined and they should remain so quarantined until cultures show the throat to be free from the organism, thus no definite period of quarantine can be assigned. Reports from many observers show that the average length of time in the majority for the Klebs-Loeffler bacilli to remain in the throat is twenty-one to thirty days; but this varies greatly, and cases have been reported as having the organism present all the way from a few days to 100, 200, 300, 400, 500, the highest being 669 days reported by Prip in 1901. I have had cases lasting two months.

In general it may be said that very few people are disposed to take the disease.

According to Trump (Munich), one attack confers immunity in a large proportion of the cases for the rest of the individual's life, second and third attacks occurring in 9 to 13 per cent. (Zucker).

The reason that diphtheria is so frequent in early childhood no doubt is from the fact that children are in the habit of putting all manner of things in their mouths that may be infected and are creeping on dust-laden floors and are prone to catarrhal conditions of the nose and throat.

Diphtheria may be contracted either by direct or indirect contact. By direct contact may be mentioned those suffering

from the disease, but no doubt a more fruitful source is the so-called bacilli carriers, as very mild unrecognized cases; persons who have been in contact with diphtheria cases and have become infected but have shown no symptoms of this disease, being immune to even the virulent forms of bacilli, and cases which have recovered but where the bacilli are still present.

Indirectly diphtheria may be distributed by means of dust-soiled clothing, books, toys, eating utensils, sewage, water, and milk. Pets, such as cats, dogs, chickens, and also rats, as was conclusively proven by cultures taken from these animals by Jessie Weston Fisher, M. D., in a recent epidemic at the Connecticut Hospital for the Insane.

Dr. Fisher found 2.08 per cent. of the apparently healthy individual bacillus carriers in this epidemic, and after the epidemic was over, 1 per cent. bacillus carriers.

The diagnosis of diphtheria is, therefore, both clinical and bacteriological, but finding the Klebs-Loeffler bacilli in the throat establishes the diagnosis.

The clinical picture of diphtheria varies greatly, depending on the location of the disease, its severity, and complications.

We see all degrees of severity from a mild catarrhal angina to the most severe inflammation with profuse membrane. Between these extremes, we have the catarrhal cases with no membrane, the bacilli not being of sufficient intensity to cause a membrane; cases with small amount of membrane limited to the tonsils or nose, and with few constitutional symptoms; pseudo-membrane, or diphtheroid cases; cases with small patches of membrane distributed over the tonsil resembling follicular tonsillitis.

Severe cases with marked constitutional symptoms, large amount of membrane in the throat; and laryngeal stenosis cases.

Then we have cases of mixed infection or the so-called septic cases, which give marked symptoms of septicemia. This is a streptococcus infection along with the diphtheria, and not infrequently the glands of the neck become involved together with the surrounding cellular tissue and suppuration and sloughing result. Another not infrequent complication is broncho-pneumonia, the prognosis of which in young children is grave. Besides these we have the membranous angina in some cases of scarlet fever and the membrane following removal of the tonsils, both resembling diphtheria and which have not infrequently been mistaken for it.

Those of us who have seen many cases of diphtheria are familiar with the variable but usually low fever which attends diphtheria in general, ranging as it does from 99 to 103° F., rarely above. It may not be out of place to speak more particularly with regard to this point in nasal diphtheria.

In nasal diphtheria it is extremely rare to have a temperature of more than 99 or 100° F. unless the pharynx is also involved, and most cases of nasal diphtheria have no fever whatsoever and very slight constitutional symptoms, but if examined closely the patient will present a pallid, unhealthy, or septic look, quite characteristic.

The treatment of diphtheria in detail is too well known to require comment.

Antitoxin has revolutionized the treatment and is a specific for the disease.

In the giving of antitoxin a few points should be mentioned in regard to the dosage and time of administration.

My experience has proven that it should be given in large doses. My rule for a number of years has been to give an initial dose of 8,000 to 10,000 units, irrespective of the age, for cases of ordinary pharyngeal diphtheria; 5,000 to 10,000 units in nasal cases, and from 10,000 to 15,000 units in laryngeal diphtheria; and in septic cases or those seen late.

These doses are repeated in eight, twelve, or twenty-four hours if there is no improvement in the case.

The antitoxin should be given in sufficient doses to neutralize or antidote the toxin of the disease, since we now know that death is due to the toxin, not to the bacteria, they are only found at the seat of the lesion.

The danger lies not so much in administering too much, but in administering too little, since in a given case we are never able to know just the extent of toxemia. Enough antitoxin should be given to produce a marked change for the better. By giving a large initial dose early in the disease we overcome the toxemia almost immediately, the temperature drops, sometimes in twenty-four hours almost to normal, the pulse improves, the patient feels better, and the membrane begins to loosen and shrivel. I have rarely had to give a second dose, and complications and sequelæ are of extremely rare occurrence.

The antitoxin should be given as early in the disease as possible. A physician is never justified in waiting for the bacteriological examination of a culture, but should always administer

antitoxin in a clinical or suspicious case of diphtheria at once. When in doubt administer antitoxin, and if the case later prove to be diphtheroid no harm will have been done by the antitoxin.

The mortality in this series of over 800 cases has been less than 1 per cent. and none of those that died were over two years of age. There were five laryngeal stenosis cases, two were moribund when seen and died of suffocation; three were intubated, one of these latter died a week after recovery of cardiac failure; one seen on third day of the disease died of septicemia and suffocation, and the third had involvement of the nose, tonsils, pharynx, and larynx, and died of cardiac failure, septicemia, and laryngeal stenosis. There was one case of pharyngeal diphtheria that developed bronchopneumonia and died.

142 WEST SEVENTY-EIGHTH STREET.

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## THE EDUCATION OF THE ATYPICAL CHILD—THE UNUSUAL CHILD.

BY

S. PHILIP GOODHART, M. D.,

Consulting Neurologist to the National Association for the Study of Atypical Children;  
Chief of Neurological Clinic, Mt. Sinai Hospital, O.D.P.; Visiting Physician  
to New York Red Cross Hospital,  
New York.

THE classification of the children who are different from the accepted standard intellectually is a various and uncertain one. The terms "imbecile," "idiot," "defective," "atypical," etc., have been so variously used that we have at present no universally recognized classification.

I think the term "atypical" is one that has a distinct representation, and although not generally recognized, represents a large class of children who have not received the attention that their importance to society warrants. There are eleemosynary institutions in abundance that care for the purely defective children from the dullard down to the imbecile. There are institutions that safeguard the educational interests of the deaf, dumb, and blind; but that child who differs from his fellow beings essentially in that he does not conform to the so-called normal, the accepted standard of the usual child, and who, by the way, is a valuable asset to the arts and in intellectual possessions, has been steadily overlooked.

These children are not well poised; they are very often lacking in certain elementary faculties; are not social instinctively, very

often self-absorbed, and by reason of their conduct are more or less isolated from the rest of their playmates.

Among these atypical children are frequently found those who later on in life show unusual intellectual attainment. They are possessed often of unusual endowment in the arts and along the lines of special pursuit.

The future of these children is to a large degree determined by their education and environment.

To this class belongs that great mass of humanity, the "misunderstood." And through a want of proper adjustment to what the child needs, many a bud which should have blossomed in later life and added fragrance to this sad world of ours has been doomed to wither early owing to a misconception or indifference as to what that particular child needed in the way of training. These children, many of them, in fact most of them we may say, born of neurotic stock, are possessed of unusually vivid imagination, and one attendant feature of their mental life is this fanciful play of ideas. If this is allowed unrestrained development, these children become day dreamers, and, further, there is usually a tendency within them to perverse sexual instincts. And, again, in others weakness of will and the allurements of the easier and more fascinating way eventually lead through criminal paths.

I do not doubt but that the so-called high-class criminals, men who have shown a want of moral stability, in high social, financial and political stations, had their early instinctive faculties been properly bent, might have been saved from the misfortune of their later misdeeds. We have a good example of want of proper training in early life in the enactment of the tragedy of recent date in which a deluded youth slew his victim; also an illustration of sexual perversion, admixed with genius, who is now learning the lesson of reeducation in a criminal institution for the insane. A perusal of the life of the young murderer is a lesson to all who are interested in the subject of children with astigmatic minds.

Although the home and the school environment are important in the development of these children, there really should be schools, or rather institutions, which can deal directly with the unusual, the atypical child. It is an accepted principle of civic life that every person has a right to be educated to a certain extent at least; and again that normal children should not be hindered by others in attendance whose mental or moral qualifi-

cations differ from the standard. That most successful results can be obtained by the proper application of scientific instruction and proper environment is beyond question. There is but one institution that I know of that makes a specialty of caring for the strictly atypical child. This means that no epileptics and none of the large class of true defectives are admitted. As consulting neurologist to this institution I have had occasionally to examine many of the children as to their physical and mental deficiencies. In contrast to what we find in examining a large class of defectives, I do not observe marked degrees of physical defect. The usually recognized stigmata of degeneration which accompany the cranial defects are conspicuously absent in these children. I do not observe the cranial and facial asymmetry, palatal deformities, abnormalities of the ears, unusual length of limb and various malformations so common to the inferior types of children. On the contrary, in stature and physical symmetry, cranial measurement and appearance generally, these children did not suggest intellectual inferiority.

There is, however, to be observed a marked anemia and a general appearance of malnutrition; especially upon admission, it was most instructive in looking over the histories, family and personal, to observe that the mild degrees of neuroses prevailed as a family element, various degrees of psychoses, history of epilepsy, alcoholism, or tuberculosis, were originally present.

Under the care of special teachers it was manifest that various intellectual endowments, very often precocity showed itself within six months or a year. It was necessary to analyze carefully, to study daily, the tendencies of the child in order to bring out special faculties, which with proper development will usually enable the child to find a suitable place in his social sphere.

It was easy to see, also, that if these children were allowed to drift along, and only the usual methods of mental stimulation applied, they would soon fall further and further behind the ordinary child.

A study of the ancestry in this class of children is a great help, and a study of the child likewise brought out the fact that hereditary tendencies are strong factors in the life of these children. A study of the results of special education points strongly to the very potent influence of environment and education.

A study of the daily experience of the children's court in this city is strongly convincing of the great value from a social and

economic standpoint of the recognition of the atypical child in early life. Here almost daily are illustrations of children possessed of strong intellectual force and who are allowed, by reason of faulty adjustment to their environment, and since the best within them has not been properly developed, to fall into paths that lead to criminality, and the result is that they become the most expert of criminals; as expert forgers, counterfeiters, leaders of so-called juvenile "gangs." Their imperfectly guided intellectual powers become a menace to society, whereas, if there had been early recognition of the unfortunate defects, these youths might have been lifted to a really high plane in social life. It is not difficult to recognize this class of children, who are plentiful enough I am sure, in the classes of our public schools. There should be a means adopted for scientific investigation so that this type of child may be early recognized. It is out of the ranks of these children, I believe, that come the idols of later life, whose moral shattering every now and then startles the community.

Of course, there are those strong adherents in the belief of inexorable laws of heredity, who will not see the potent influence that education and environment exert; they would say, and perhaps with justice, that if our laws of heredity were reasonably recognized and the mating of the unfit individual prevented, we should have less need of institutions for defectives generally. I am heartily in accord with any means that will regulate procreation by the physically and mentally weak. As the aspect of our social status now exists, any such regulation in any satisfactory way, is almost utopian. The old laws in existence in Plato's time, especially the destruction of the weaklings, independent of the sentiment of the day, would probably be disastrous to our race. Intellectual superiority by no means goes hand in hand with physical excellence. Had the Spartan laws continued to exist we should have lost many an intellectual genius of modern times.

## TYPES OF CONGENITAL SYMBOL AMBLYOPIA.\*

BY

J. HERBERT CLAIBORNE, M. D.,  
New York City.

ON February 19, 1906, I read a paper at the New York Academy of Medicine, entitled "Types of Congenital Symbol Amblyopia." Later I read the same paper before the section on diseases of children of the American Medical Association at the fifty-seventh annual session, June, 1906. In them I described in detail two cases of so-called congenital word-blindness, and presented reflections and ideas which had been suggested to me by study, which ideas I take pleasure in setting before you to-day, though in a slightly abbreviated form.

I will briefly review the two cases. One was that of a boy ten years of age, who was unable to recognize the letters of the alphabet, and, consequently, could not recognize the words composed of the letters. He was fairly bright in every other respect and knew the meaning of spoken words; recognized objects and their uses; was talkative, communicative, and even garrulous at times; played and acted in a normal manner, and in all other respects was like other children of his age. His spontaneous writing exhibited to some extent the ear marks of a classical motor aphasia. He was able to recognize figures easily and had no difficulty in his mathematics at school. He was very backward according to his teacher, and she was inclined to call him a fool. The temptation was strong for me to do the same until I had studied his case thoroughly when his defects became evident; it was a case of letter-blindness, consequently word-blindness.

The second case was that of a boy of nine, in the higher walks of life, who was brought to me by his father because he could not be taught to read at school. This boy knew his letters perfectly, missed none of them, but when it came to recognizing words

\* Read before the National Association for the Study and Education of Exceptional Children, April 21, 1910.

showed himself decidedly word-blind. My own name, Herbert, he wrote from dictation, letter by letter, "Herbdred" and called it "purram." There were a few words like *rat*, *cat*, and *all*, which he spelled accurately because, his father said, he had been drilled in them thoroughly by repetition. Beyond that he was unable to recognize any word at all.

When asked to make a few figures, his whole demeanor changed, and he approached the desk cheerfully and with apparent confidence. He made them all correctly, knew them all, and did several sums as quickly and correctly as any child of his age. He appeared an intelligent child. He was likewise most shame-faced and shy on account of his defect, recognized it, and was examined with the greatest difficulty. After describing his case in public, I wrote his father requesting that I might see him and examine him again. He replied that the boy was unwilling to come to me on account of shame-facedness. I lost track of both of these children and do not know what has become of them.

This boy wrote fairly well at dictation and spontaneously. He differs, therefore, from the preceding one in that he recognizes the letters which are component parts of a word, and can pronounce each letter in every word, but when he has finished that he cannot recognize the words which the letters spell; nor can he remember the pronunciation which has been fixed by authority.

To depart for a moment from the important consideration of the cases in hand, I would like to know who it is that says *c a t* spells *cat*, except by authority of custom and wont. *C a t* spells *cate*, but custom and authority has made it *cat*, and *cat* it remains for all time unless changed by statute. But *d o g* spells *dog*, and cannot be made to spell anything else. Those who learn to read English always have this difficulty before them, and it would be interesting to know what difference there is in the relative facility with which children learn English which is filled with such arbitrary pronunciation, and some other language in which each vowel and consonant has a definite value, such as Italian, Spanish, and German. Let us compare, for example, the English words "tough" and "slough." No such difficulties, I believe, exist in the three other languages I have mentioned. I believe, and it is reasonable to assume, that word amblyopia exists more frequently in English-speaking children than in those speaking other languages that have not the difficulties of English.

The method of instruction employed in our public schools is

of particular advantage for those cases in which there is letter amblyopia and letter-word amblyopia.

I refer to the method by which children are taught to read by looking at words and recognizing them as a whole. A child who can differentiate T from Z would certainly learn to differentiate the word "lake" from "dog" for example, and call them correctly since they have no resemblance whatever to each other. Whereas, by the old method of instruction of teaching letters first, it would be impossible to teach these children who are letter amblyopic to read these words. I am aware also that the cultivation of the auditif is a factor in the method of instruction referred to. For my own part, I cannot give too great commendation to this method of instruction.

Let us take, for example, the English word "mutton." If we teach by the old method, it is necessary that the child should spell the word out by the letters and, therefore, two acts of auditory memory are necessary. First, that m u t spells "mut"; second, that t o n spells "ton"; then comes into play the constructive faculty of putting the two together and pronouncing them "mutton." But when the child is taught that the word "mutton" with its visual marks and characteristics, stand for the sound "mutton," the fact is accomplished easier and is not so complex. A simple and single act of word memory alone is sufficient, and the constructive act is avoided.

It is a well-known fact that there are many people who throughout their lives are unable to learn mathematics or comprehend it, and that as children were backward in this respect; indeed, far more backward than would be naturally expected from their general intelligence. I think I may cite my own case here without being too personal. Mathematics has always been a bugbear with me from childhood. Every other department of learning which I have essayed has been fairly easy to me, but in the presence of figures I was ever as shame-faced and shy as the boy I have described. The higher mathematics are as unintelligible to me as the cuneiform inscription on the walls of ancient Babylon, yet I believe I can think in a fairly straight line, form a syllogism, and draw a conclusion consistent with the necessary forms of thought. Mathematics, unless it is of the transcendental type, deals with the relationship of things to each other; and many a man has been able to achieve good results by the practical handling of things without being able to reduce his acts to the analysis of symbolic thinking. This is the illustration of the

so-called practical man who, when he gets uniformly good results, must understand what he is doing, yet the symbolic figuring representing his acts would be totally unintelligible to him.

Now letters and words are symbols of one kind even as figures are symbols of another; both represent thought, so I think that this form of figure amblyopia should be classed as a distinct thing and placed in the same category with letter and word amblyopia.

Dr. McCready has made some reference to another term that I have created, viz., amblymusia, or imperfect appreciation of music. Music can be classed under two heads, written music and sound music. Those who have a good memory for musical sounds and can reproduce by voice or instrument their auditory musical pictures are said to have a talent for music. Yet there are a great many people having perfect memory of tone who cannot reproduce it. Such people, of course, have not the constructive faculty of reproducing their musical pictures. Again there are people who have excellent musical memory and so-called good ear who can play by note only with the greatest difficulty, and who can memorize a written piece of music only by the greatest effort. Such people have good auditif for music but symbol amblyopia for musical notes as written.

It is well known that savages are exceedingly poetic by nature, and one would naturally conclude they would have a natural talent for music. The reverse, however, seems to be the case. The music of savages in reality is no music at all; it is not "a concord of sweet sounds," but noise, cacophony. Nevertheless, they have precedents in nature in the sweet singing of birds, the sighing of wind in the tree-tops, the rhythmic fall of water, than which there is no sweeter music. I am inclined to think, therefore, that our conceptions of music, particularly symbolic music, are purely the result of evolution and civilization. The faculty of remembering musical notes is a distinct one and probably should be classed with figure memory and letter memory. Per contra, want of ability to remember musical notes, should be classed under the head of symbol amblyopia.

As science progresses it is possible that other symbols will be created in the future to represent advances of science, and when that has been done it is not unlikely that other forms of symbol amblyopia may become apparent. We all recognize that

there are some who play cards well, and some who do not. There are those who have the so-called "card sense" and those who have not, and my study of symbol amblyopia has convinced me that those who play cards well are those who have good memory pictures of the cards in the pack; and those who do not play well have symbol amblyopia. It is probable that this form of amblyopia is more nearly allied to that for figures than to any of the others; because cards concern numerals and yet there are face cards and numerals in the pack, so that the defect is probably both a picture and a numeral amblyopia. I believe if sufficient investigations were made it would be found that those people, as a rule, who are good in mathematics are good card players, though it may not necessarily be so. If I may refer to myself once more I would like to record my own experience as consistent with this suggestion; I am a wretched card player, and I am no less diffident and shy about playing cards than I am about doing mathematics. I have for cards the same aversion that I have for figures. My weakness in both directions is known to my intimate friends.

The discussion of this subject and of the other kindred ones, is to enable the members of this Association to determine upon a method of correction of defects in defective children; it is, therefore, of the highest importance to be able to draw conclusions from the study of all these subjects. Upon our conclusions may be based methods of action which if they do not cure the defects present, will minimize or modify them and enable us to place these unfortunate children in such a position as to insure their happiness and success and prevent the mortification which comes from unjust criticism or the chagrin which comes from failure.

As Dr. McCready has pointed out to you, the left side of the brain controls speech in those who are right-handed; and the right side of the brain in those who are left-handed, and it has occurred to me as a method of treating these children who are symbol amblyopic, that they should have their "dexterity" reversed as I have described it, that is to say, at as early an age as possible those who are right-handed and symbol amblyopic should be trained to left-handedness, and *vice versa*, so that the speech center is reversed in each case from one side of the brain to the other, and one side so educated that it takes command or supplements the other.

When I read my paper I suggested that experiments should be made along these lines. I did intend to put this into practice in one case, but have been unable to do so owing to the limited opportunities to study the child.

I believe this is the first time that any suggestion of this description has been made with reference to congenital amblyopia or word-blindness. In a letter written in the last twelve months to the *Journal of the American Medical Association*, I carried this idea of reversing the dexterity into a field which is allied but somewhat different. I refer to the unfortunate defect of speech known as stuttering. I conceived the idea that stuttering is due to a congenital defect somewhere in the neighborhood of the speech center, and that lack of coordination which characterizes this defect is the result of imperfect cell development in the brain. My suggestion was based mainly upon the study of my own son. He is naturally left-handed and was taught French first; he learned speech as readily and as rapidly as most children, but after he commenced to speak well enough to attract the attention of others, his mother determined to change his left-handedness into right-handedness, and so constantly corrected him. I observed that as soon as he had used his right hand for some time and had acquired some ease with it, he commenced to stutter. We persisted, however, in making him right-handed and after several months caused him to be habitually so. In proportion as his right hand became more dextrous his stuttering diminished and now having acquired perfect use of his right hand, he has ceased stuttering entirely. It required between twelve and eighteen months to produce this effect. At this time he is eight years of age and occasionally uses his left hand and seems to prefer it, but uses his right hand habitually.

Upon this result I suggested in my letter that those who stuttered might be cured by changing their dexterity at an early age. I repeat that the only experience I had is the not over-satisfactory case of my own son. I trust that others will adopt this suggestion and that the correctness or the falseness of this explanation of stuttering will be demonstrated.

I rejoice to say that Dr. McCready\* agreed with me in that

\* Dr. McCready has recently reported a case of word amblyopia combined with stuttering which was cured by reversing dexterity as suggested in my letter. The patient was a young man of twenty who could not learn to recognize words and who stuttered so he could hardly make himself intelligible. He was finally able to read and speak fluently.

stuttering is the result of imperfect cell development in the brain and that it is allied to symbol amblyopia.

It should be the purpose of those who correct defects in children to eliminate the defect completely if possible, but if that defect is due to a cell degeneration or cell malformation of the brain, it is questionable whether it will ever be completely corrected; now it is in the highest degree unlikely that exactly the same two centers will be affected on both sides of the brain. It therefore appears to me the most reasonable treatment in all these symbol defects to consider the matter of reversing the "dexterity." At any rate, if I may be allowed to make the suggestion to those whose business it is to handle children of this description in schools, I would say that if the defect cannot be cured it should be altered as far as a correction can alter it, and that then the natural inclination or the bent of such children should be discovered if possible by experimentation, and that bent or inclination cultivated to the limit. These poor children are the very antithesis of genius, which may be said to be an exaltation of one or more faculties at the expense of the others. But these children have, as a rule, a diminution of one faculty with normality or exaggeration in others. Nevertheless, if it can be discovered in these children that they have a peculiar bent or inclination it should be cultivated to the highest degree.

#### CONCLUSIONS.

1. There is an incomplete word-blindness which is congenital and which should be called word amblyopia.
2. There is doubtless an incomplete congenital figure-blindness which may be called figure amblyopia. This may be the basis of the inability of some children to learn mathematics as easily as their general intelligence would lead one to expect.
3. These two forms of amblyopia may be called symbol amblyopia.
4. There is an incomplete congenital word-deafness which should be called amblykusic to parallel the term amblyopia.
5. There is doubtless an incomplete congenital musical note deafness which may be the basis of the inability of some people to remember and appreciate musical notes; this should be called music amblykusic, or amblymusia.
6. When cases of these kinds are met in the schools they should be carefully differentiated, properly grouped and instructed.

5. The basis of instruction should be repetition, coupled with patience.

8. It is reasonable to teach such children to become left-handed, in order that the speech, symbol and sound centers on the right side of the brain may be cultivated to the exclusion of those on the left, or as supplemental to the defects on the left.

9. The last suggestion is applicable to cases of stuttering and stammering.

11 EAST FORTY-EIGHTH STREET.

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ORAL DEFECTS A GREAT HINDRANCE IN THE PROPER  
DEVELOPMENT OF CHILDREN; THE STATE'S  
DUTY TO COPE WITH THESE  
CONDITIONS.\*

BY  
ARTHUR ZENTLER, D. D. S.,  
New York City.

In order that anything, be this of an organic or an inorganic nature, should be perfect in its entirety, it must be so in its details; and a child in order to be physically as well as mentally normal must have all its organs performing their intended functions normally. In other words, all the child's organs, be they of lesser or greater importance, must be anatomically and physiologically perfect.

In my endeavor to show how defective organs hinder the proper development of children, I shall limit myself to the defects of the oral cavity.

Malocclusion is in the oral cavity both the origin and the result of almost all the defects and pathological conditions which in their turn contribute to the retarded or arrested development of other organs.

It may be possible to trace the origin of malocclusion even as far back as intrauterine life; it certainly is possible to prove that often malocclusion is due to improper care of the child's mouth in early infancy. The necessity of stimulating the bone growth of the mandible and maxilla is as often overlooked as is overlooked the important relation of well-developed jaws and palatal arches to the respiratory apparatus. No straight nasal septa, well-developed nares, wide chest containing perfectly developed lungs, can be found in children with constricted palatal arches or with prognathic jaws. And it is not necessary

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to explain that children who cannot properly air their lungs, and thus are lacking in proper blood-supply will not receive the needed pabulum to their brain; and thus we find them retarded in their mental development as an indirect consequence of their oral defects.

In order to strengthen this assertion I will casually mention, without going into statistical details, that in Germany, where at first the city of Strassburg and later other cities and state governments were made to see that it was their duty to care for the correction of oral defects in children, the people have reached the gratifying result of seeing that children who were backward in their studies have risen in rank in their classes, making wonderful progress after their oral defects were corrected.

Oral defects of a different character than the ones attending the malformation of the jaw-bones or the malposition of the teeth in the jaws are the direct cause of interference with the proper physical and mental development of children. I mean such common oral defects as the "tooth decay," and I intentionally use the terms "common" and "defects."

"Common," because "tooth decay" is found in 97 per cent. of school children and is so widespread among people all over the world that Professor Jessen, the originator of the Strassburg School Dental Clinic, names tooth decay "Die Volkskrankheit" (the disease of the people).

"Defects," because while "tooth decay" is mostly a pathological condition *per se*, very often this pathological condition is enhanced by an arrested or retarded development of the tooth structure.

Tooth decay in young children if not corrected in time so as to, through repair, retain the attacked organ will result in ultimate loss of one or more of these organs. The loss of as little as one tooth is sufficient to bring about malocclusion; the loss of more teeth will result in extended malocclusion, which at an age prior to the eruption of the "first permanent molar," commonly known as the "sixth-year molar," is sure to result in malposition of the permanent teeth, because the crowns of these develop between the roots of the temporary teeth.

But malposition of permanent teeth is one of the predisposing factors of tooth decay; and, while teeth placed in correct apposition to each other act as a self-cleansing apparatus and thereby are greatly protected from the ravages of caries, irregularly placed teeth can only with great vigilance be kept from decaying

and only extraordinary precaution for perfect cleanliness of all and every one of the tooth surfaces and sulci will save them. In a mouth where occlusion is perfect, which implies that the maxilla and mandible are perfectly developed, that all the teeth are present and are in their correct position with regard to the arch in which they are placed and with regard to their relation to the teeth in the opposite arch, the soft tissues and organs, such as cheeks, lips, and tongue, will during the act of mastication come in close contact with all the surfaces of these teeth and a natural self-cleansing process is the result. And so well will nature do this, which in defective oral cavities only extraordinary artificial care for cleanliness will accomplish, that usually in a perfectly developed mouth tooth decay will be a negligible quantity.

But perfect nature is rare and so are perfectly developed oral cavities. The majority of children on account of this labor under difficulties which impede their physical and mental development, waiting for proper care which, if given in time and given efficiently and universally, not sporadically as it is given at present in a few clinics kept up by philanthropy, will be from a political, economical standpoint of such benefit to the state and society that the expenditure which the state—and the state alone can do it universally, efficiently—would make, will be a thousandfold repaid by building up a body of men and women well developed physically and mentally, while without corrected oral defects the development will never go on normally.

The German government many years ago recognized the need of correcting oral defects in order to improve the physical condition and thereby to develop mental faculties, when through its secretary of war it issued the ordinance that the young men entering the German army or navy must pass through the military dental infirmary before taking up duty. When it is realized that in Germany every able-bodied man must, at the age of twenty-one at the latest, take up military duties, and that in doing so his oral defects are corrected and oral hygiene is established by force of habit for the rest of his life, a result is reached which if parental physique has any influence upon the physical and mental development of offspring—and I believe few are the ones who doubt this—we find the German offspring having the advantage of parental good influence from at least the male side. With the advent, since 1905, of the public school dental clinic and its generalization in Germany, the care of oral defects

will gradually turn from a corrective into a prophylactic measure, and both boys and girls benefiting from it, the children of future German generations as a consequence of it will have the advantage of parental good influence from both the male and female parent, and thus the German people can look forward to a race with normal oral development, with proportionate jaws, well-occluding teeth, perhaps almost immune to the ravages of caries, and I daresay as a final consequence of all this to a better general physical development, and through it necessarily to higher mental development.

The public school dental clinic which at present is spread over almost all of Germany is being adopted by other European countries, Switzerland following Germany. In the United States of America the dental profession has almost since its existence as a profession tried to do something toward instituting clinics for correcting oral defects for those who could not pay, but most of such clinics after a short while would go out of existence. In recent years the more concentrated efforts of the profession, aided by philanthropic institutions, have resulted in a more systematic care of the mouth of—a very few among the very many—children who need it. Here in New York, for instance, where statistics show that over 300,000 children have oral defects, only a few hundred children frequenting three of the industrial schools supported by the Association for Improving the Condition of the Poor have the privilege of having their oral defects attended to. In the State of Massachusetts, and especially in Boston, very serious efforts are being made toward generalizing the school dental clinic. In Ohio the dental profession, seconded by philanthropy and in a measure aided by the State, expects to carry out a programme, which will take care of oral defects of all school children.

Past experiences in this country as well as in countries where such half-way measures as are now tried here were attempted, show that nothing really efficient and of universal benefit can be gained in this direction, unless it is undertaken and carried out by its "natural guardian"—the State! Therefore at the sixtieth annual session of the American Medical Association in June, 1909, during a discussion,\* in the Section on Stomatology, I emphasized the importance of instituting and maintaining dental clinics by the states or cities, appointing dentists at sufficiently high salaries and with prospects of becoming pensioned,

\*Published in the *J. A. M. A.*, of July, 1909, p. 53.

so that, serving in clinics, they shall refrain from private practice and give their entire time to this work. I am glad to say that enough interest was stimulated among the members of the Section for a resolution to be proposed and carried, that the house of delegates of the A. M. A. be requested to recommend this measure to the legislature. I earnestly hope that the house of delegates of the A. M. A. will favorably act upon it and that finally it will be taken up by the state, who, asserting itself in modern society as its guardian, thereby assumes responsibility for its welfare.

Each newborn child becomes a prospective member of society, and according as to how his or her faculties will develop it will become a useful or a useless member, a "help" or a "burden," to society. If by means which, for the great masses of the people, the state alone can employ, some children may be changed from useless into useful members, it is plain that it is the state's duty to undertake this task.

The very fact that the state asserts itself as guardian of society by assuming the privilege of regulating and governing society implies the obligation—no privilege without obligation—that the state be watchful that such rules and regulations which it imposes upon society may comfortably and profitably, both to society and the state, be carried out. When the state ordains that all parents must send their children to school, the state takes the obligation: first, toward the child, that it be placed and kept in such physical comfort that its mental faculties may develop to their highest possibility, thereby not needing to spend more than the officially acknowledged necessary time for going through the school grades; second, the state takes the obligation toward society, who contributes to the state's budget, that it may not be burdened any more than necessary, as it would with children with uncorrected physical defects impeding their mental faculties and placing them in the position to need the attention of teachers and to use the space in schools reserved to them for longer periods of time, thus burdening the state budget.

That such oral defects as malformed jaws and arches with their bad influence upon the development of other organs indirectly retard mental development, I believe, was clearly explained early in this paper, and what mother does not know of the debilitating influence upon her children of the other defect, the common "tooth decay"; how many sleepless nights passed

in agonies of pain, resulting in the physical inability of regular school attendance, were the consequence of "tooth decay"?

If the parent is not financially in a position to have the oral defects of the child properly attended to, or if for lack of better knowledge the parent neglects this needed attention to the child, and as a result, regular school attendance is interfered with on account of physical debility, is not thereby mental development impeded? Will the child not lose his time and will not the state spend more for educating this child? It is therefore to the interest both of the child and the state that the state undertake the correcting of oral defects in children, beginning at the earliest age possible, with a view rather of prophylaxis than cure.

In order to waive the possibility of a doubt as to the fact that the expense to the state to maintain school dental clinics is not greater than the schooling of children with uncorrected oral defects, I will mention that in Germany where this experiment has been carried on for over five years, statistics show that the former proposition costs a great deal less than the latter. It costs the city of Strassburg about twelve cents yearly per child to correct and maintain in good condition its oral cavity.

It is hard to lay down rules as to how the condition relating to oral defects should be met.

It may be expedient to begin by introducing in the curriculum of the schools for kindergarten and public school teachers enough of oral hygiene to enable the teachers to intelligently explain and inculcate to their classes the need and method of oral cleanliness, as a precursor to better oral development. Further, to arrange for systematic periodical conferences, given by dentists to pupils of all the public schools, inviting to such conferences the parents of pupils, and in connection with the lecture to illustrate the normally developed mouth, the defective mouth, the result of early corrected defects and the sad consequences of neglected oral defects. To illustrate how home hygiene ought to be carried out and to lay great emphasis upon proper infant diet, and, above all, not to forget to preach that true maxim which is printed in all the German dental clinics: "A clean tooth surface does not decay."

Such measures if carried out universally will have the effect that when the state will take the next absolutely necessary step in order to accomplish results—when it will institute and maintain the public school dental clinic and make it a rule for every

pupil to pass through it for thorough periodical oral examinations by dentists paid by the state and giving their time exclusively to the clinic—the parents and pupils will not look upon this rule as arbitrary or despotic, but will gladly obey it. Of course, the school dental clinic, after establishing the needs of each individual child, is not to force the children to have their defects corrected by the state, if their parents are willing to have private practitioners do it for them, but in the interest of general hygiene of society and state such children who cannot seek paid services shall be cared for by the state.

265 CENTRAL PARK, WEST.

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## TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY.

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*Annual Meeting held in Washington, D. C., May 3, 4, and 5.  
The President, DAVID L. EDSALL, M. D., in the Chair.*

### PRESIDENT'S ADDRESS.

DAVID L. EDSALL, M. D., Philadelphia, said that the honor of serving for a year as the president of a group of men who are the highest representatives of their type of work in this country imposed upon one the duty not merely of giving expression to complacent satisfaction, but also of devoting serious thought to the activities that may be open to the members of the Society, as individuals or as a group of men, by which they might still further advance the honorable standing of the work that is their chief concern in life. He recognized that the things he desired to say could not be considered exactly as advice, as they were not his own thoughts alone, but in more or less the same form were uppermost in the minds of others. He felt that proper dignity and regard were not yet accredited in this country to a subject which had proved to him unquestionably the broadest, most complex, and the most important division of general medicine and that proper standing would not be generally given to pediatrics in this country until better things were demanded for it by concerted action and until better things were demanded for it by a large group of those who are the recognized leaders. The dignity of the intellectual pursuits was determined by two things: first, by the opportunities offered those who teach the subject and by the manner in which these opportunities are made use of; second, by the extent to which those who follow that pursuit engage in matters that vitally affect the welfare not

only of those individuals with whom they come in immediate contact, but rather of the public at large. He thought there were ways in which great usefulness could be secured for pediatrics in both of these directions and believed that the Society could rapidly, by the strength of carefully planned concerted action, greatly benefit the position of the work which it represents. The methods pursued by the teachers determined the standards demanded in the subject and the quality of the future exponents of the subject. Among the teachers of this subject there were men who have in certain ways no superiors in any part of the world. Concerning the provisions made for their teaching, however, there were points which might be justly commented upon and not wholly favorably. Pediatrics was probably more inadequately provided for in most medical schools than any other important subject. This criticism was of the general group of schools, not of individual schools. In some the system of teaching was relatively excellent. But nowhere is provision made for the subject as good as that which is made for general medicine, surgery, and obstetrics. Neurology, he thought, had much more actual standing and recognition in the general group of our best medical schools than has pediatrics. Yet he thought that the problems of infancy and early childhood were much more distinct from general medicine than were the problems of neurology and more properly demanded generous provision for instruction. At the present time there were in this country at least twice the number of men of recognized distinction in neurology than there were in pediatrics. The explanation he thought a patent one and that while the responsibility might be properly thrown in part upon the shoulders of the administrators of medical schools it could not be wholly upon them, but must be shouldered by pediatricists themselves. It was a common and seemingly just statement that the clinical branches have in this country in the past generation by no means kept pace with the medical sciences in methods of teaching and investigation. He made a strong plea for better general conditions in teaching and said that it was a well-recognized fact among educators that unless a man does some kind of research, more or less continuously, he does not make, or at any rate does not long remain, a sound teacher, simply because the teacher must, in order to make the student search for knowledge, search continuously and diligently himself. The kind of research work done in any particular department is commonly accepted, and rightly so, as the best criterion of the character that the teaching in that department will exhibit. The chief essentials for making well-trained men and for attracting first-class men into a subject were that the men shall do most of the work themselves and not be merely told about it; that they shall be made precise and critical in their methods and that the craving for a sound understanding for the reason of things be satisfied by having them clearly com-

prehend the relation between the fundamental and the practical things. In these ways general medicine and general surgery had been quite transformed within two decades, and now students do most of the work in the wards and dispensaries. In pediatrics the changes had been much less distinctive. Cases were less frequently seen as problems to be worked out by the student himself. Of course that was less attractive to the best men. Healthy minded persons enjoyed eating more than being fed. The propriety of studying pediatrics as a special subject rather than as a mere part of general medicine was based essentially upon the fact that the infant and young child differ from adults enormously in degree and almost equally in kind, in susceptibility to infections and especially in liability to derangements of nutrition. This he thought gave a greater justification for specialization than any based upon difference in the organs of the body and demanded of those who would enter into pediatrics a very wide and subtle knowledge of the two types of work that are now and probably will be for years to come the most progressive and most productive lines of work in medicine and at the same time the most complex and difficult: infection, immunity, and hygiene, with the physiology and pathology of nutrition. The difficulty in regard to the studying of cases could be overcome only by demanding that the clinical work in pediatrics shall be put on the same basis as that which is being struggled for and increasingly secured in medicine and surgery. He thought that the Society could wisely take upon itself a serious consideration of the manner in which teaching and investigation in this branch may be benefited and by individual and concerted action further whatever appears to be wise. In this way he thought results could be rapidly accomplished. Among other ways in which he thought the Society could take a useful part was a study of school conditions and the industrial conditions among children, which should be studied by persons of calm and judicial temperament so that we might be informed upon the actual state of affairs by those whose opinion would be more reliable than that of perhaps overenthusiastic philanthropists.

AN EXPERIMENTAL STUDY OF THE FOOD REACTIONS IN THE INFANT STOMACH COMPARED WITH THOSE IN VITRO.

D. M. COWIE, M. D., Ann Arbor, Mich., and WM. D. LYONS, Ann Arbor, Mich., because of the many discordant views as to disturbances of infant digestion, endeavored to ascertain how food reactions in the infant stomach compare with those *in vitro*. They determined, first, the stimulating effect of normal food; how altered by certain chemical substances, and how that compared with results obtained in test-tubes. They determined that the stomach is capable of stimulation from the first day of life; that all the ferments are secreted at that time. The secretion of

acid was represented by curves which gradually rise. Taking samples of stomach contents from time to time, a curve characteristic of the majority of infants was obtained. They made from a hundred and fifty to two hundred analyses on twenty-eight or twenty-nine infants and rarely found free hydrochloric acid present in the stomach. It is not necessary in order for the stomach to perform all its physiological functions. After fasting for six or eight hours they found hydrochloric acid, but at the end of the feeding period or in the middle they rarely got free hydrochloric acid. They determined that the basic condition of calcium casein must be overcome before the rennin precipitates rennin curds. Conditions are different from those in test-tubes. The statement that basic calcium chloride hastens evacuation of the stomach was not true. Taking out fats and anything that would inhibit motility of the stomach, they found that in forty-five minutes the change had taken place, producing the ordinary curd. Basic calcium chloride did not prevent formation of curds in the stomach in majority of cases. They also showed that acidity hastened the opening of the pylorus. They believed this had more to do with the evacuation of the stomach than the curds. The curds were easily crushed and large curds did not occur in normal conditions of the stomach. Calcium-chloride curds were easily precipitated. They concluded that it was not necessary to produce a perfectly soft curd, but to learn what chemical changes actually go on in the stomach. They considered the acid control of the pylorus of great importance.

#### THE ESTIMATION OF CHLORIDES IN THE STOMACH CONTENTS FROM NORMAL AND FROM ATROPHIC INFANTS.

A. H. WENTWORTH, M. D., Boston, presented this paper which was a continuation of work alluded to in a previous article, the principle of the research being the discovery that hydrochloric acid is diminished in the stomach contents of atrophic infants. The secreting power in cases of infantile atrophy was much diminished. It was thought that the stomach of atrophic infants fails to secrete sufficient hydrochloric acid to stimulate the duodenum. In the first series of cases the stomach contents were obtained one hour after eating and determination was made. Results showed diminished secretion of hydrochloric acid in every case. The same experiment was made with healthy infants with variable results; in four cases it was greater and in three cases it approximated that of the atrophic infants. The results were not conclusive and a second series of observations were made. This article gives the results of the second series and certain conclusions that may be drawn from them. Unfiltered stomach contents were used in every case; soft-rubber No. 19 French catheters were used; contents obtained with infant lying on side. The essential data were arranged in the form of tables. The diagnosis of infantile atrophy was made from clinical evidence

alone. The possible relation of stomach contents to degree of acidity appeared not to be present in this series. A few cases showed marked gain in weight with only a trace of hydrochloric acid in the gastric juice. There was rarely more than a trace of hydrochloric acid from the stomach of atrophic infants fed on cow's milk. The results correspond closely with those of the experiments previously made. The stomach contents of well-nourished infants fed on cow's milk showed diminished amount of hydrochloric acid, corresponding closely to about one-half of the atrophic infants. Although the diminution was marked, it was never so extreme as in the atrophic infants. The results tend to prove that marked diminution of hydrochloric acid occurs in infantile atrophy. It was also shown that these infants can gain markedly in weight without hydrochloric acid in the gastric juice, and that there is greater variation in hydrochloric acid in the stomach contents of these infants than in normal infants.

A STUDY OF THE GASTRIC CONTENTS AND MOTILITY IN BREAST-FED  
AND BOTTLE-FED INFANTS.

HENRY HEIMAN, M. D., New York, exhibited charts showing the experiments that were conducted in the children's ward at Mount Sinai Hospital, the study having been for the purpose of adding to the data on the subject of gastric digestion in infants. The first group consisted of twenty normal infants from three to seven days old; the second group, thirteen artificially fed infants three weeks to seven months old. In all the temperature normal for at least a week and condition good. The method of procedure was, with the new-born, to weigh the baby before and after nursing. At the end of one hour stomach contents removed with French catheter. No preliminary lavage was performed. In the second group four examinations were made for each case. Contents received in glass jar and measured in graduate, then filtered and the filtrate used for the tests. In the first group thirty specimens were examined. Quantity of milk consumed at each feeding from 30 to 200 gm.—considerably above the figures usually assumed at that time of life. In general the peptic action was more at the end of one hour than at the end of a half-hour. The work showed in new-born infants the large amount of milk taken at one nursing; that practically the same quantity was obtained at the end of one hour as at the end of one-half hour; that total acidity was practically the same at the end of one hour as at the end of a half-hour; absence of free hydrochloric acid in all cases; presence of rennin in two-thirds; presence of lactic acid in one-half of the cases. In the second group pepsin present in only six cases; rennin in but two. The writer thought it remained for future study to place the matter of gastric analysis of infants on as firm a basis as that of adults.

STUDIES OF THE EFFECT OF VARYING QUANTITIES OF FAT AND OF  
THE PRESENCE OF VARIOUS SALTS UPON DIGESTION AND  
METABOLISM.

CHARLES F. FIFE, M. D., Philadelphia, and B. S., VEEDER, M. D., Philadelphia, had undertaken the studies to determine the absorption of fat in cases of chronic intestinal disease in infants. The infants were placed on definite formulæ for some days and the urine and feces completely collected. Case I, infant nine months, weight 10 pounds 9 ounces. Case II, age ten months, weight 11 pounds 10 ounces. Tables and charts were exhibited to show the varying formulæ. As to fat absorption the work showed in both cases that fat absorption is below that of healthy infants. The total amount is less the less fat is ingested. Where little fat is given the percentage of absorption is much less. The amount of carbohydrate present had no influence upon fat absorption. Evidence pointed to the necessity of the splitting of fats before digestion. They found that in the low fat periods the actual amount of soaps in the feces was higher than in the high fat periods. The lower the fat ingestion the higher the amount of soaps. The work showed lowered fat absorption in these two cases of chronic intestinal disease while most writers claim that there is not much difference. They did not find any definite relation between the calcium, in the fat, the calcium in relation to the total amount of fat, or relation to the soaps in the feces.

THE RESULTS OF SUBSTITUTE FEEDING IN PREMATURE INFANTS.

MAYNARD LADD, M. D., Boston, concludes from a study of 125 cases of infants, in which the total mortality was 65.6, no infant under six months surviving, that modified milk must be considered as unsatisfactory food for premature infants and should be used only when breast milk cannot be obtained. Incubators were not employed.

THE EFFECT OF HIGH FAT AND LOW FAT DIET UPON THE  
NITROGENOUS METABOLISM OF INFANTS.

JOHN HOWLAND, M. D., New York, and ROBERT A. COOKE, M. D., New York, presented the results obtained with three infants put in a metabolic apparatus. On a fat-free diet they determined that all the calories could not be supplied. On a high fat diet the caloric value rises. The protein given represented 6/10 gm. nitrogen per kilo. The first boy began with practically fat-free diet which was increased gradually until he was taking 76 gms. a day of food containing over 7 per cent. of fat; he was kept on this two and one-half months, then reduced to fat-free diet. When on fat-free diet his stools were brownish, frequent, and thin; as it increased they became light, and on high fat diet whitish. A second child, boy of six months, badly nourished, with ischiorectal abscess, had stools brownish and very foul odor, as the fat intake was increased they became

light and finally white and almost dry. The ammonium output was relatively high throughout. On medium fat diet child did best. Case III, small, badly nourished infant of five months, investigation lasting three weeks. At first he took fat-free food, then it was increased rapidly. Never did well at any time; showed definite reaction to all fat feeding. The first child showed only benefit; the second with excessive amount of fat showed disturbance, and the last child was upset by a moderate intake of fat. The results showed the danger of trying to draw definite conclusions from limited material. They do not advise the use of too much fat, but the individual tolerance of some infants is so great that the greatest variation may not produce any harmful results. They conclude that the best diet is undoubtedly one containing both fat and sugar in moderation.

THE NUTRITION OF THE FEEBLE INFANT: (a) MOTILITY OF THE STOMACH; (b) RESULTS OF A TRIAL OF FINKELSTEIN'S METHOD.

HENRY D. CHAPIN, M. D., New York, said the proper nourishment of feeble infants is a problem that taxes the resources of the most skillful pediatricist. That digestion and assimilation may be poor, either by inheritance or from faulty feeding, and when from any cause the general vitality of the infant is lowered, the digestive tract is usually the first to suffer and the last to recover tone. Improved diet and hygiene offered the only successful treatment: drugs were of little or no avail. In normal infants during health no great difficulty was encountered in reference to the kind and quantity of food. In feeble and badly nourished infants, however, the weak action of the stomach, especially in its muscular power, was the source of much trouble. With this in mind a series of twenty-one cases were studied with regard to gastric motility. The ages of the cases were as follows: two weeks, one; three weeks, one; six weeks, one; two months, one; three months, six; four months, four; five months, two; six months, one; seven months, one; twelve months, three. These infants were taken from the wards of the hospital and represented all grades of malnutrition from the beginning cases to those in the last stages of atrophy. It was not possible to form any definite conclusions as to gastric motility based on the age of the child from these cases. Of nineteen examined at the end of three hours, only six could be shown to have approximately empty stomachs, and these six, with one exception, were holding their own, and in no case could free hydrochloric acid be determined. In thirteen out of the nineteen it was absolutely demonstrated that there was a considerable residual amount of food still remaining in the stomach. Butyric acid fermentation was marked in six, and in two in which the stomach was apparently empty there was found a trace of butyric acid. In seven cases examined at the end of three and one-half to

four hours five were surely empty; of the remaining two cases one showed many curds at the end of four and one-half hours, while the other showed only a few small curds. Few if any of the children were normal and conclusions drawn from the cases had value only as a study in the nourishment of a feeble child. The writer concluded that there could be little doubt that in a large majority of cases the feeble infant with digestive disturbance has been fed at too frequent intervals; too often a second feeding being given before the previous meal has passed through the pylorus, with the result that each successive feeding is contaminated; in the feeble infant gastric motility is greatly decreased, and it is often necessary to increase the intervals between feedings. Attention was called to the analogy between this state in the infant and the condition known as myasthenia gastrica in the adult, an important element in the treatment of which is to make certain that the stomach is never overloaded. Speaking of the form and quantity of food elements, the writer said that changing the form of the protein has frequently a very important place in the management of infants and that changing the form of the carbohydrates also frequently shows a marked effect in the infant's progress.

In regard to Finkelstein's method of feeding, based upon the idea that instead of the fat or protein being the usual cause of trouble, most digestive disturbances are due to the sugar of milk, and the principle of the new method being cutting down of the amount of milk-sugar and of the salts, adding in place of this casein and fat and substituting other forms of carbohydrates for the milk-sugar. The writer tried this method in a series of twenty cases. They were all hospital cases and presented the usual difficulties of infants previously badly fed. The stools generally became gray, homogeneous, with putty-like consistence; there was usually then a tendency to constipation. The results were not very promising in this series of cases. Eight cases gained slightly in weight, while twelve lost. The writer believes that when benefits follow this method of feeding the results are due more to the form in which the protein is given than to the lessened amount of sugar in the mixture. Judging from the character of the stools, he thinks it might act well in certain forms of diarrhea.

#### DISCUSSION.

DR. F. S. MEARA, New York, said that the papers involved such careful work that they could scarcely be discussed off hand, but he desired to ask Dr. Wentworth if he had taken into consideration the relation of the fat to the quantity of hydrochloric acid, and to ask Dr. Cowie whether he attributed the opening of the pylorus to the action of the acid on the gastric or duodenal side.

DR. A. H. WENTWORTH, Boston, desired Dr. Veeder to explain

whether the periods of feeding were continuous or not and whether one period ran into another. Also whether the percentage of fat per gram was ascertained. It had been his experience that the greater percentage of all the fats excreted was in the form of soaps.

DR. HENRY D. CHAPIN, New York, said that, so far as the incubators or padded cribs were concerned, he rather preferred the padded cribs, as he had found that the best incubators were not as good as the cribs; he preferred a varying temperature to the steady temperature of the incubators. He had never saved a premature infant without breast milk.

DR. ISAAC ABT, Chicago, had been impressed with the discrepancy in results and various interpretations of those doing the chemical research work, though he believed there would be important definite results ultimately. He thought the dogmatic methods used in some quarters in making interpretations and attempting to make clinical deductions based on chemical results thus far obtained was somewhat premature. He was impressed with the idea that besides the chemistry of digestion there is a biology of digestion, and that the ultimate appropriation of the molecule and its combination with the cell was of more importance perhaps than the chemical details.

DR. SAMUEL L. BERNSTEIN, Cleveland, corroborated what Dr. Chapin had said in regard to the advantages of the crib over the incubator and thought the electric heating pad with maternal feeding had been the means of saving a number of these premature infants.

DR. D. M. COWIE, Ann Arbor, said in reply to Dr. Meara's question that he was inclined to believe that it was the action of the acidity on the duodenal side that had to do with the retention of food in the stomach.

DR. B. S. VEEDER, Philadelphia, said in regard to Dr. Wentworth's question that the experiments extended over seven or eight weeks—the child being first put on a formula for three or four days and then placed upon the metabolic bed on the same formula. They had not tested for soaps separately, but did compute the percentage of soaps.

DR. HENRY D. CHAPIN, New York, said that it was of the utmost importance to have the meals properly spaced, as otherwise there remained a residuum of food in the stomach to contaminate each successive addition of food. This constantly recurring contamination and overburdening of the stomach resulted in fermentation and in time gastric dilatation with loss in tone of the muscular coats of the stomach, thus explaining how a chronic digestive disturbance may lead to the condition known as atrophy.

He was in sympathy with the remarks of Dr. Abt about studying these questions along the broad lines of biology.

DR. JOHN HOWLAND, New York, thought the biological question was largely hypothetical. It could not be expressed in

figures, in charts, and, while very interesting, it led no further than to saying that in each individual there is an individual variation. Until the work had been done in terms that could be expressed in figures there had not been a beginning.

#### AMYOTONIA CONGENITA.

J. P. CROZER-GRIFFITH, M. D., Philadelphia, said that ten years ago Oppenheim in Berlin noticed a peculiar symptom complex and reported a few cases but not in detail. They had a condition of flaccid palsy, which appeared to be congenital, varying up to complete paralysis. No actual atrophy. Oppenheim called this myotonia congenita. As the symptoms were so similar the writer called this amyotonia congenita. He has found in all forty-eight cases besides his own. He reported a case which came to him in December; a child fifteen months of age; no family history, except intemperance in both father and mother; diagnosis of myelitis had been made. The mother said the child had never been able to do anything with its hands. The position of the hands suggested tetany. Electric reactions did not give reaction for poliomyelitis or tetany, in fact no reactions could be obtained. Dr. Mills suggested that it was a case of myotonia and further investigation corroborated that. The child could not turn itself in bed; when seated in bed it flopped about in any direction; the head fell forward or backward, anywhere gravity took it. No affection of sensation. Tendon reflexes abolished; respirations almost entirely abdominal, the respiratory muscles being affected. The child was thought at first to be very weak-minded. In four and a half months it has improved wonderfully. It can now take a biscuit in the hand and slowly lift it to the mouth and bite at it. The author considers the cause and pathology of the disease so far as known together with diagnosis and treatment. There seems to be reason to believe that it is congenital either in its manifestation or in its origin. It is an affection of the muscles not controlled by the cranial nerves. As to the pathology, there have been eight observations more or less complete, but no one had come to any positive conclusion. There was in almost every instance loss of striation of muscles or loss of nuclei. In some there was involvement of the anterior horns of the cord, but this was as yet not certain, because the changes described were so slight. Spiller maintained that there was no change in the nerve centers. The disease has to be distinguished from poliomyelitis and from hypertonia. Nothing much could be said as to prognosis. A number have died from respiratory involvement. Treatment was hygienic, with electricity and massage.

DR. HENRY HEIMAN, New York, asked if the Wasserman reaction had been taken in this case to rule out syphilis and Dr. Griffith replied that no test was made in this case, but so far as they could learn there was no history or symptom of syphilis.

A STUDY OF THE VALUE OF BRUDZINSKI'S "NECK SIGN" AND  
CONTRALATERAL REFLEX IN THE DIAGNOSIS OF  
MENINGITIS IN INFANCY AND CHILDHOOD.

J. LOVETT MORSE, M. D., Boston, said that Brudzinski in a paper on "The Contralateral Reflexes in the Legs in Childhood," published in 1908, drew attention to a sign which he found in tubercular and epidemic meningitis, and occasionally in other conditions, but never in healthy children. This sign was a concomitant reflex of the leg on one side when passive flexion of the leg on the other side was made. He concluded that in connection with other signs, such as Kernig's and Babinski's, it was useful in the differential diagnosis of meningitis. In a later paper he stated that further study had confirmed him in his conviction of the value of this sign. In 1909 Brudzinski had published another paper in which he stated that in meningitis passive flexion of the neck forward causes flexion of the legs at the hips and knees and a marked flexion of the legs on the pelvis. He found this sign in twenty of twenty-one cases of tubercular, in all of eleven of cerebrospinal, and in two of pneumococcus meningitis. The writer had examined four-hundred children, either well, or ill, with diseases other than meningitis, as to the presence of this sign. Ninety were well; one-hundred and fifteen suffering from disease of the respiratory tract; ninety-eight with various diseases of the gastroenteric tract; thirty-one with diseases of the nervous system other than meningitis; the remainder with a variety of diseases, typhoid, nephritis, influenza, heart disease, rickets, purpura, scarlet fever, measles, etc. Neither the neck sign, nor the contralateral reflex was elicited in any instance. He concludes from the study of these four-hundred cases that Brudzinski and his followers are correct in their statements that neither the neck sign nor the contralateral reflex are present in well children or in those ill with diseases other than of the nervous system, and that they are very seldom met in diseases of the nervous system other than meningitis. That their presence in an acute disease is strong evidence of meningitis; that their absence does not exclude it. The diagnostic value of the contralateral reflex is less than that of the neck sign. They occur in all types of meningitis and so are of no importance in differentiation.

DR. MATHIAS NICOLL, New York, had three weeks ago a case in which he found the sign positive. When left an hour the child would give a decided contralateral reflex reaction, but if it was induced several times in succession there was very much less marked reaction. He had also had an opportunity of trying it in a case of cerebrospinal meningitis in which he had been able to get a very positive response, though it varies in intensity.

*(To be continued.)*

## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON PEDIATRICS.

*Meeting of April 14, 1910.*

ELI LONG, M. D., *in the Chair.*

### MENINGOCELE.

DR. MARY SUTTON MACY presented a child, fourteen months old, who was first seen by her at the Gouverneur Clinic. The baby was the first born and was delivered spontaneously. Over the bridge of the nose was a tumor which had existed since birth. It pulsated freely and when the child cried became reduced in size. A tentative diagnosis had been made of hernia of the frontal sinus, or a meningocele, or a pulsating angioma. She thought the use of the *x*-ray would aid much in clearing up the diagnosis. The tumor was reducible by pressure.

DR. WARD BRYANT HOAG had seen an exactly similar case at the New York Polyclinic; it occupied a similar situation, had the same characteristics, could be made to disappear on pressure, and there was an absence of bone. It appeared in Dr. Kerley's service and they concluded it was a meningocele.

DR. L. PIERCE CLARK said that his experience with these cases was very limited, he having seen but three, and they were all older children at the Randall's Island Institution. No one had undertaken to close the opening between the bones. The results of surgery in these cases had been unsatisfactory and unfortunate, because of the danger of infection and because these patients did not stand operations well. He thought the case presented by Dr. Macy was very interesting and rare.

DR. HENRY W. FRAUENTHAL believed this to be a case of meningocele. The *x*-ray, however, would aid them greatly in making a diagnosis.

DR. L. PIERCE CLARK expressed surprise that this meningocele disappeared in greater part when the child cried, the contrary was usually the case. The tense muscular action of the pyramidalis nasi did not seem to be of sufficient compressive power to account for the disappearance when the child cried. The condition here was the same as in spina bifida and similar operation of laying open the sac and closing the communication with the cranial cavity might be undertaken; a retaining plate might be made for the bone defect at the cranial opening. Treatment by injection of these meningoceles with iodine or its com-

pounds was uncertain of good results. One should always bear in mind that these cases do poorly under any form of surgical manipulation.

#### CRETIN SIX MONTHS OLD.

DR. WARD BRYANT HOAG presented this patient. The family history had no bearing on the case. The child was six months old and was seen by him March 28. The child was born at full term; it was a head presentation and a very difficult labor, not only was the delivery of the head difficult but of the shoulders as well. Instruments were used. An interesting question arose in this case as to the influence of the excessive traumatism on the body, or the force exerted upon the neck, in destroying the substance of the thyroid gland. When the baby was two or three months old it began to lose weight. When he saw the child on March 28, it weighed eleven pounds and six ounces. The child was seen by a number of men. The mother supposed it was a hopeless idiot and brought the child to the hospital because of an umbilical hernia. The child had a shock of coarse hair; there was a broad slip between the eyes, a broad nose, the mouth characteristic of a cretin, but the tongue did not protrude. There was the short condition of the long bones, especially of the humerus and femur. The skin was cool. There was the broadened hand and shortened fingers and held in the characteristic fashion. The child apparently had no mentality.

The baby was placed on one-quarter of a grain of Park Davis Co. thyroid extract, which was equivalent to one and a quarter grains of the fresh gland, twice a day. At the end of one week the child nursed better and was warmer, although he lost three-quarters of a pound in weight. He was then given one-quarter of a grain of thyroid extract three times a day and during the next seven days he gained one-half pound. There has been a slow but gradual improvement in the patient. This was probably the youngest cretin ever reported, so far as he knew.

DR. GODFREY R. PISEK said there was no doubt about this case being a true cretin, for the picture was typical. The interesting point was the early months in which the diagnosis was made. It was very difficult to make a differential diagnosis at this early time of life between a cretin and a Mongolian idiot.

DR. ELI LONG said the youngest cretin he had ever seen was eleven months old. The child was brought to the clinic because the mother stated that it never cried. The trouble had not been suspected. When the photograph was taken, it practically made the diagnosis. The oldest cretin he ever saw was a man twenty-three years old. This patient had lived in New York all his life and was accustomed to sit at the window with his chin in his hands all the time. He had been to the hospital where sweat breads were ordered, but he could not afford to get them. He was very phlegmatic and constipated, and slept nearly all

the time. After taking thyroids he first became very thin, his teeth dropped out, and he could not sleep. A marvelous change occurred.

DR. CHARLES HERRMAN recalled a case he had seen recently in which there were one or two features worthy of note. When the patient was given thyroid, the hair fell out, but eventually he got a new crop of hair. The palms of the hands and the soles of the feet peeled as extensively as though the patient was desquamating after a severe attack of scarlet fever. Especially emphasis should be laid upon the institution of early treatment in these cases, for their results are then so much more favorable. These patients never attain a normal intelligence.

DR. L. PIERCE CLARK said the paramount interest in cretin therapy was the effort toward successful thyroid body transplantation. Certain experiments upon animals had shown that it was possible to obtain a functioning implanted thyroid. Now that arterial anastomosis was becoming more practical it seemed reasonable to look forward to a more hopeful future for these cretins. It was certainly but a therapeutic aggravation to rely upon thyroid feeding for a certain number of years, and then on its withdrawal to see the cretins, not only relapse, but rapidly become worse than before therapy was undertaken. It is a fact not sufficiently impressed on the clinical mind that cretinism *per se* has but little or nothing to do with idiocy as ordinarily understood as a permanent defect of mind. No special therapy could improve the mental outlook of an idiot. The type here shown might more properly be called cretinoid in as much as it occurs as a sporadic case and lacks the intensity of coarseness and stupidity of the endemic cretinism of Switzerland.

#### CASES OF HEAD NODDING IN COLORED CHILDREN.

DR. CHARLES HERRMAN presented five children treated in Dr. La Fetra's service at the Vanderbilt Clinic. One was a boy four years old; he had the nodding some time ago; it disappeared, but only to reappear about two months ago. This was rather unusual and it was especially unusual to see head nodding in a child four years old.

A very interesting thing regarding these cases was the etiology. A great deal had been written upon this question. By some it was supposed to be a disease associated with rickets. As a matter of fact nearly all the colored children brought to the Vanderbilt Clinic had rickets and, therefore, in these cases it could not be said to play a very important part in the etiology of the disease; rickets certainly was not essential.

Another interesting point concerned the teeth; the movements were more marked especially when the teething was difficult, and Dr. Herrman was inclined to think that the head nodding was more marked at this time because with difficult dentition the children were more restless, slept less, and became more fatigued.

With regard to traumatism being a causative agent, few of the cases gave any history of a fall; if any did give such a history, the fall was probably secondary to the disease. They had, as a rule, incoordination as part of the disease already existing and consequently fell quite easily.

Much stress had been laid upon a theory which was proposed some years ago by Raudnitz. He investigated a number of these patients carefully and found that many were living in dark rooms and the conclusion was reached that darkened rooms with artificial light played an important rôle in the causation of the trouble. Some years ago in Dr. Koplik's service at the Good Samaritan Dispensary, twenty cases were investigated by Dr. Herrman and it was learned that one-half lived in dark rooms, while the other one-half in light rooms; Dr. Herrman thought, therefore, that the influence of darkness as the sole etiological factor in these cases could be dismissed.

Raudnitz had compared the nystagmus to that occurring in miners. An article had recently appeared in which it was stated that darkness as a causative factor was not the sole one; that nystagmus occurred almost exclusively among coal miners, therefore something more than darkness was necessary. The theory was advanced that because the miner used the pick with the employment of certain long continued rhythmic movements, that this caused the nystagmus and the condition did not result solely because the miner worked in the dark. The nystagmus in these cases was not a disease of the eye, but it was a disease of the brain. So far as Dr. Herrman had been able to investigate, he believed that the most plausible explanation of the head nodding with nystagmus was that it was a coordination neurosis. There was an individual predisposition and there was the age predisposition, a certain stage of development of the nervous system. A peculiar thing about this nystagmus was that it was often unilateral; even if the condition was present in both eyes, it was the more marked in one eye. Another peculiar thing was that these children held the head to one side and looked out of the corners of the eyes, "cocking the head," and this was so characteristic of the disease that it might almost be called pathognomonic. They probably assumed this position of the head in order to get the image focused on a certain portion of the retina.

With regard to the treatment, bromides had but little if any effect. The children should be kept in the open air as much of the time as possible.

With regard to errors of refraction and astigmatism, none of the cases showed any; they all had normal vision.

DR. L. PIERCE CLARK said that inasmuch as nodding spasm of the type shown occurred only in infancy and all cases recovered we should look for its real cause in a retarded anatomical development in the bulb mechanism of coordination of head or eye movement. It was reasonable to suppose that there is retarded

development, a lock perhaps, of myelinizations of nerve fibers in the great coordination tract of the posterior longitudinal bundles in the medulla, thus giving rise to the functional imperfections seen in nodding spasm. Its frequent association with other disorders of maldevelopment, such as rickets and the like, would help on this hypothesis. The partial recurrence of the head movement in the eldest child caused by fright might be looked upon as a choreiform disorder induced in a congenitally weak coordination mechanism. It would be interesting to note whether infants once affected with nodding spasm more commonly develop chorea later in life. This observation would be doubly interesting in this instance as all the children shown here are from the colored race, one commonly supposed to be infrequently attacked by chorea.

#### ENDOCARDITIS ACQUIRED AT SIXTEEN MONTHS OF AGE.

DR. WARD BRYANT HOAG presented a girl, eight years old. Her birth was normal and easy. She was breast-fed and was considered to be a normal child up to the age of fourteen months, at which time the mother acknowledged that she had been fed indiscretely. From sixteen to twenty months of age she was very ill most of the time. It was then noticed that her heart beat very forcibly and she was taken to a physician. She was very short of breath, had moist râles in her chest, a certain amount of edema of the lungs, and she could scarcely walk across the floor. She was allowed to do as she wished. Finally she was put to bed and confined there for a number of weeks. When she was allowed to be up, her activities were very carefully supervised and she became very much improved. For instance, when going up stairs, she was required to count ten on every step. Her fingers were not clubbed, she was now not suffering from any shortness of breath, and she was having a good time generally. A loud thrill was heard over the heart, there was but little hypertrophy, the apex being very near the normal point.

DR. ROLAND G. FREEMAN believed this to be a case of congenital heart disease which had not caused any manifestations until the child had become sick.

DR. WILLIAM P. NORTHRUP said that there was no doubt in his mind but that this was a case of congenital heart disease; it had all the characteristics, with all the signs but without the cyanosis. He had made autopsies upon nine similar cases, three of which had been under observation at the Foundling Hospital. In each case there was a narrowing of the pulmonary orifice with a defective septum ventriculorum.

#### FRIEDRICH'S ATAXIA: TWO CASES.

DR. EDWARD LIVINGSTON HUNT presented two patients, sisters, daughters of Russians. The mother had three brothers and sisters, and the father was one of nine children. All had

lived mostly out of doors. The ages of these two daughters was eleven and three and a half years. The history of the pregnancy and labor was absolutely normal in each case. There was no history of tuberculosis, alcoholism or syphilis. The older child began to walk late and since the age of about five years walked with difficulty. The difficulty in walking had greatly increased and now she could not walk alone. There was no knee-jerk. There was a lateral curvature of the spine. She had very marked choreiform movements. She had no nystagmus. The younger child began to have difficulty in walking a few months ago and this was the only symptom present. The unusual feature in this case was the early age at which the disease appeared; when two and a half years of age she developed ataxia. The mentality of both children was very good. In the older child there was clubbed feet, with a marked prominence of the instep. Dr. Hunt said that there had been only about two hundred of these cases reported.

DR. L. PIERCE CLARK said that the chief interest to him in the subject under presentation and discussion was that we were now in a position to refute the theory propounded by Oppenheimer and his school that Friedrich's ataxia was an hereditary luetic affection. The Wassermann and Noguchi blood tests in these cases are entirely negative. The theory of Edinger and Gowers was that abiotrophy best explained the disorder here as in muscular dystrophy, where blood tests for hereditary lues were also negative. The theory maintains that certain parts of the body, such as special muscle groups, nerve tracts, and ganglia, have not only a defective development, but also meet with an untimely death.

DR. RICHARD B. KRUNA believed that it would be reasonable to attempt some forms of exercise in these cases, starting with having the child instructed again as to the use of the muscles; in fact, a system of reeducation.

DR. HENRY W. FRAUENTHAL believed that this instruction should be given with the child in front of a mirror; they should be taught too to concentrate their minds on the work they were doing.

DR. HUNT said that the prognosis in these cases was not good, for such patients generally died before they attained the age of twenty-five years.

#### GUMMATOUS INFILTRATION OF THE MENINGES.

DR. GODFREY R. PISEK said that this case, a girl of six years, had been referred to him by Dr. Wynkoop, of Syracuse. There was a younger child who was said to be in good health. The patient was born prematurely and weighed three and one-half pounds at birth. With the exception of pneumonia at the age of nine months and pertussis at the age of three years she had had no serious illnesses until the present. A year ago she had a

convulsion, and two months later, after a walk of a mile, she had another, after which she was lame. Five months ago she had another convulsion, after which she seemed to be in good health except for the lameness. Questioning of the mother elicited the fact that about three weeks after the birth of the child there had been scaling of the palms of the hands and soles of the feet, which promptly disappeared under treatment. Prior to the first convulsion the mother had noticed both mental and physical deterioration. The mother learned that the father had a luetic history and was treated on the advice of her physician during her second pregnancy when she gave birth to a healthy, robust boy. Physical examination of the child showed a fairly well developed girl of six years. Her nutrition was not impoverished, but there were marked circulatory disturbances, cyanosis of the hands and feet, the skin of the feet being dry and atrophic. When in the erect posture she assumed a leaning position from the hips. She could stoop and walk alone, but preferred a helping hand. In the sitting posture she had a relaxed spine. She also had inguinal adenitis. The left median incisor tooth was notched and loose and the lower median incisors notched. There was general caries of the teeth. The heart sounds were normal, liver one inch beneath the right costal margin. The spleen was not palpable. There was spasticity of the lower extremities, exaggerated knee-jerk and Kernig's sign was present and positive. There was some hyperesthesia over the body; no anesthetic zones found. The language was repetitional and somewhat incoherent. Examination of the eyes showed a peppery granular appearance around the macular region and a pale disc. The condition was descending atrophy of the optic nerve due to degeneration compression. A tentative diagnosis of gumma of the base of the brain was made based upon clinical symptoms as at that time neither the father nor the mother admitted luetic infection. Later the father admitted having had syphilis. The Noguchi reaction was negative for the father, but the mother was distinctly positive. The diagnosis was made upon the complex multiform character of the symptoms, both motor and sensory, with physical changes which were startling. From the motor, sensory and ocular symptoms one could conclude in this case that there was a diffuse gummatous infiltration of the meninges. The question of the relation of the mother to the condition was interesting and important. It was not yet clearly established whether a syphilitic child could be born of a mother who was herself free of lues. Thomsen and Boas had examined a sufficiently large number of cases of hereditary syphilis to make their conclusions of some value and they conclude that a positive Wassermann reaction in the mother lessens the possibility of the child being born sound. Latent syphilis in children might give a faintly positive reaction and the reaction might wholly fail during the first month. The mothers who bore syphilitic children were themselves to be looked upon as syphilitic if their

blood gave a positive Wassermann reaction. Knoepfelmacher concludes that the serum of mothers having syphilitic children, whether they have had symptoms or not, whether they have been treated for syphilis or not, give a very high percentage of complement fixation and that the mothers of children having syphilis gave as high a percentage of positive Wassermann reactions as did men who had reached the latent stage of the disease. A positive Wassermann, if leprosy be excepted, must always mean syphilis; but a negative or faintly positive Wassermann carried with it no such weight. Furthermore, it was almost certain that syphilis, and especially latent syphilis, might occasionally give a negative result. Hence it would not be at all unexpected to find that 40 per cent. of mothers, whether they have had symptoms or not, fail to show complement fixation. While it was too soon to draw absolute conclusions serious doubts were thrown on the correctness of the Colles' law, and it might fairly be claimed that it was only a question of time before the incorrectness of the law would be established. At present it seemed highly probable that the mothers of children with hereditary syphilis were syphilitic also.

DR. WILLIAM P. NORTHRUP said he was not so sure that this was a case of gummatous infiltration of the meninges as it was a proliferation of the connective tissue. He had seen many of these cases with a thickened dura and pia but with no gummatous infiltration.

#### INTESTINAL INFANTILISM OF HERTER.

DR. ROLAND G. FREEMAN referred to five cases reported by Dr. Christian A. Herter in 1908, in which the symptoms were arrested development of the body, marked abdominal distention often with dilation of the abdominal veins over the upper part of the abdomen. There was usually very marked fatigue and moderate anemia. There was a tendency to looseness of the bowels with occasional attacks of diarrhea, often with fatty stools, though there might be but little fat in the food. These cases were apt to have an excessive appetite and thirst, increased secretion of urine and cold hands and feet. Symptoms of rickets might be present. Herter found an absence of the ordinary bacterial flora of the intestines of young children. The organisms present were Gram positive, the prevailing organism being the bacillus bifidus of Tissier together with the bacillus acidophilus and the bacillus infantilis. The bacillus coli and the bacillus lactis aerogenes were infrequently found during the active stage of this disorder. The amount of urine passed was large; there was a rise in the ethereal sulphates, a pronounced indicanuria and an excessive phenol and the presence of aromatic oxyacids. Herter found gelatine particularly useful in increasing the weight in these patients. Dr. Freeman reported three cases of this condition which he had seen recently. The first case

had been under his care for eight months. She was three and a half years old and had had frequent attacks of bowel trouble and was greatly debilitated. No food had been found which appeared to increase her weight until about a month ago when she began taking buttermilk. She had gained two pounds and there was an improvement in the character of her movements. There has been a general improvement in her condition, though an examination of the urine and feces shows the characteristic condition described by Herter, and the administration of intestinal antiseptics had had no influence on the bacteria of the intestines. The second case, a child of nineteen months, showed the classical symptoms of this condition, and there were also some colon bacilli present in the feces. This child had not gained on any modification of milk that had been tried. She did best on a preparation of dried skimmed milk to which a moderate amount of fat was added in the form of cream. The third case was a child seventeen months old who did well until last July, when she had an attack of vomiting, diarrhea and fever; similar attacks followed at intervals and she did not gain in weight. Although many different foods had been tried and a wet nurse had been secured there had been practically no increase of weight since last July. This case approached the type of intestinal infantilism described by Herter but was not characteristic. The feces showed the characteristic bifidus which was very abundant as well as the coli communis and some cocci.

SPASTIC PARAPLEGIA TREATED BY RESECTION OF POSTERIOR  
NERVE ROOTS.

DR. JOHN J. MOOREHEAD presented a boy, seven years old. He had been under Dr. Pisek's case before Dr. Moorehead saw him. It was very difficult to obtain a satisfactory previous history, the father not having a very definite knowledge of the child's early history. It was learned, however, that the boy appeared to be well until he was two years of age; he appeared to be well although he had never walked. When the child entered the hospital he had a typical spastic condition which was most marked in the lower extremities, especially on the left side. There was some spasticity of the upper extremities. He was mentally active and bright. There was the characteristic irritative condition of the reflexes, very marked knee-jerks, ankle clonus and Babinski's. At the November meeting of the Section on Pediatrics he heard of the technic employed by Dr. Clark and Dr. Taylor in such cases, and decided that this was a case for a similar operation. Accordingly, on February 5 a laminectomy was performed at the Red Cross Hospital, following the technic laid down by Dr. Taylor. Because of the little space between the transverse processes it was found impossible to expose a sufficient amount of the cord to do a hemilaminectomy; therefore they had to resort to a bilateral

laminectomy. Digitation of the second, third and fourth left lumbar posterior roots, and three upper right lumbar roots were divided. There was nothing of interest in the postoperative history of this case except that there was a rise of temperature to 104, rapid respirations, and it was feared for a time that pneumonia would develop. Four days after the operation, however, the temperature was 101, and a satisfactory convalescence from the pneumonia, as well as from the operation, followed. The spasticity became markedly lessened within three days after the operation; the reflexes disappeared absolutely and had not returned; this was true of the knee-jerks, the ankle clonus and the Babinski. The postoperative history was really unimportant. The operation had, without doubt, relieved the spasticity to a considerable degree, and placed the boy in a position for further orthopedic and educational means. The general nutrition and tone of the lower extremities especially had been much benefited by the work done.

DR. PISEK said that when the boy entered the hospital he knew that he was a fit case for operation, especially as the spastic paraplegia was associated with a good mental condition. The spasticity was very marked; the boy could walk only on his toes, holding on to the bed or some other furniture.

DR. CLARK thought that Dr. Moorehead was to be congratulated on the excellent clinical outcome in this case. Orthopedic training could now be employed with great advantage. He would advise a further resection of half of the dorsal nerve roots of the first and second sacrals in a year from the first operation. His own series of operated cases were making excellent progress under physical training and would be presented at a future meeting.

#### A "CONGENITAL FREAK."

DR. HENRY W. FRAUENTHAL presented a child with congenital double club feet and hands, a congenital dislocation of the hip on one side, and a knee which was at right angles to the normal axis. As he termed the case, it was a "congenital freak."

#### NEW SIGNS OF MENINGITIS FROM FRENCH AUTHORS, WITH ILLUSTRATIONS.

DR. WILLIAM P. NORTHRUP spoke of the new signs that he had read from French journals and their application which he had employed in three cases. He illustrated his remarks with pictures. These were called "*identicales reflexes*" and "*contralateral reflexes*."

## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Studies of the Diarrhea of Infants.**—Elie Metchnikoff (*Gaz. méd. de Paris*, Jan. 1, 1910) believes that bacteria are of great importance in the causation of diarrhea in infants. To prove this he has experimented on rabbits, causing diarrhea in them, and later in chimpanzees, by injecting them with the infectious material from a case of cholera infantum. These animals were fed on the same materials which they had eaten with impunity before the experiments, and we may conclude that the food had nothing to do with the diarrhea; hence the bacteria must have caused the disease. It is the Gram-negative organisms that are found in these stools. The bacillus proteus is the most frequent. In rabbits and chimpanzees this bacillus was found in the stools and also in the blood. It is a truly pathogenic organism whose rôle in the diarrhea of infants cannot be doubted. We must now consider how it reaches the intestine of the child. It is rarely found in cow's milk, but is present in the feces of most animals, the upper layer of meats and cheese, and most vegetables, fruits, and salads. From these it reaches the intestines of adults and by contact with them is communicated to infants. Flies aid in this dissemination upon food. Proteus is well tolerated by adults, but causes diarrhea in infants. Preventive measures include not only pasteurization of milk, but sterilization of the hands of attendants, and careful washing of fruits and vegetables in boiling water which kills this bacillus. The cleansing of streets and destruction of flies are also important.

**The Systematic Treatment of Infantile Bronchopneumonias by Inhalations of Oxygen.**—Weill (*Lyon méd.*, Jan. 2, 1910) gives the results of cases of bronchopneumonia in young children treated with large and almost continuous inhalations of pure oxygen; it is used not as a symptomatic treatment but as a remedy for the specific infection, as an antiseptic for the air passages. The technic is simple, without danger, and the therapeutic results are claimed to be remarkable. Bronchopneumonia is a descending infection of the air passages from infections of the nasopharynx, which are usually saprophytic. The lesion is treated locally by the oxygen and the same time the system is protected against the effects of the infection. The author creates a veritable atmosphere of oxygen for the lungs, the inhalations being repeated every hour or half hour. It may also be used in bronchitis as a prophylactic against pneumonia, and in fully developed pneumonia it should be continued some

time after resolution is going on. The course of the disease is shortened, and defervescence is rapid. Temperature is lowered, pulse slowed, dyspnea relieved, and sleep induced by the inhalations. They are given from rubber bags of oxygen with a mask that covers nose and mouth.

**Roseola Infantilis.**—Doubtless many will recognize a type of case discussed by John Zaliorsky (*Pediatrics*, Jan., 1910) who feels convinced that there is a symptom-complex, a febrile erythema, occurring mostly in infants, which deserves a place outside of the erythema group of skin diseases, and to which the name roseola infantilis was given by the older writers who, however, did not differentiate this disease from rubella and other skin diseases. The patient is almost always a child under three years of age who is suddenly taken sick with high fever, which continues for from two to five days. During this time examination shows nothing else abnormal. The fever usually ends by crisis on the fifth day and the child who has been drowsy or very irritable sits up and commences to play. Coincident with the drop in the temperature a morbilliform rash appears on the face and neck and rapidly spreads over the body. The eruption disappears in twenty-four to forty-eight hours. There are no sequelæ. No desquamation follows the disappearance of the rash. The temperature usually ranges between  $102^{\circ}$  and  $105^{\circ}$ , is continuous, with slight morning remissions, and is accompanied by extreme restlessness at night and drowsiness during the day. The fever may disappear a few hours before the rash is observed. The morbilliform eruption is most marked on the trunk, less so on the face. There is no crescentic arrangement and the lesions are generally not elevated. There are no catarrhal symptoms except congestion of the fauces. Vomiting or diarrhea is only occasionally observed. The superficial cervical lymph nodes are usually slightly enlarged. All the writer's patients were artificially fed in whole or in part. The disease is not contagious. Its active cause is unknown, but it is possible that it is intestinal intoxication.

**The Cerebrospinal Fluid in Cerebrospinal Meningitis.**—Ch. Dopter (*Prog. méd.*, Jan. 25, 1910) says that the special characteristics of the cerebrospinal fluid in cerebrospinal meningitis are of the utmost importance in the diagnosis of the disease. The ideas given by the cytological, bacteriological, biological, and chemical examination of the fluid should be considered as evidence of the reactional phenomena going on in the cerebrospinal meninges. They give an exact idea of the anatomical condition, the degree of the meningeal inflammation, the number of microbes present, the course of the disease and the effects of treatment, and show the necessity and value of further intervention or the reverse. Dopter's investigations have shown the following conditions in the acute stage; the liquid is turbid, the intensity of the turbidity depending on the amount of inflammation present; its color is gray or yellowish; microscopically

it contains many cellular elements, most of them being polynuclears of all shapes, the protoplasm vacuolated, the nucleus altered. There are some mononuclears, a few lymphocytes, and large cells resembling endothelial cells. Bacteriologically there are seen meningococci, single and in twos, some of them intracellular. On the other hand, in some cases no meningococci are found, and this negative evidence does not positively disprove the presence of the disease. The precipito-reaction consists in adding to centrifugalized cerebrospinal fluid antimeningococcic serum and placing it in the incubator; after eight to fifteen hours it becomes turbid through formation of a precipitate. The deviation of the complement gives further information. The fluid contains albumin. As the disease regresses, when treated by the usual means, the fluid clears, polynucleosis lessens and the germs disappear. When serum is injected these changes occur much more quickly. There are many atypical cases in which some of these phenomena are not present.

**Double Infection with Measles and Scarlatina in Children.**—Brudzinski (*Arch. de méd. des enf.*, Jan., 1910) considers the consecutive occurrence of measles and scarlatina, more than three days apart, and generally during convalescence from one of the diseases, as simultaneous infections. The organism being weakened by the disease which has already occurred is in some instances more severely infected with the second disease, there being apparently no protection by one against the other. There is a great difference of opinion as to whether the second infection is always more severe, and as to whether there are more complications than usual in this case. The author reports and analyzes the histories of cases seen at the Hospital in Lodz, where the simultaneous infection occurred. There were thirty-eight cases in all; six of them contracted the mixed infection in the hospital; four had never had measles. The two eruptions may occur at the same time, or either may precede the other. Of the cases in which the eruptions were present simultaneously there were three; one died. In six cases scarlatina appeared first, while in three measles preceded; all recovered. This small series of cases suggests that measles does not exercise a bad or fatal influence on the scarlatina which follows it. As to the complications which ensue, none were more frequent except otitis, which is a frequent complication of scarlatina when uncomplicated with measles. Bronchitis and bronchopneumonia are a little more frequent. The character of the eruptions differs according to the periods of appearance. The two eruption may occupy different locations on the body; one may disappear before the other; the measles eruption may develop very slowly; scarlatinous desquamation when occurring does not influence the measles eruption. Desquamation in the mixed infection is more abundant than when the eruption is single. On the face will be seen measles desquamation; on the chest and trunk the two exist together; on the limbs, large squama of scarlatina are

found. Koplik's sign is of great value in the diagnosis of measles in these mixed infections.

**Scarlatina and Erysipelas.**—H. Roger and Margarot (*Bull. méd.*, Jan. 22, 1910), after citing cases in which erysipelas was a complication of scarlatina, say that the erysipelas may be either a slight attack, or a very severe affection, with high fever, and severe kidney symptoms. The renal symptoms begin with intense headache, and great diminution of urine, which contains much blood. The kidneys are already weakened by scarlatina, and the new infection is unusually severe. It generally occurs during the convalescence from scarlatina. It is a very grave general condition, which endangers the life of the patient, and necessitates the use of electrargol as a measure against infection. As to the pathogenic causes of the two diseases, it is positively established that the cause of erysipelas is the streptococcus; it is also established that in scarlatina the streptococcus is the causative agent of the complications. Most of the latest bacteriological studies of scarlatina favor the idea that the streptococcus is not the specific cause of scarlatina. The streptococcus is found often in the blood of the scarlatina patient. The specificity of the streptococcus is rendered less probable since it has been demonstrated as the cause of erysipelas, septicemia, vegetating endocarditis, etc. The streptococcus of scarlatina is agglutinated as well by the serum of scarlatina as by that of erysipelas or other septicemias, notably puerperal fever, and phlegmon. The agent of secondary complications of scarlatina does not differ from that of the other streptococcus infections. To sum up, erysipelas may complicate scarlatina; these diseases, entirely distinct and due to different germs, are connected in some way by the rôle which the streptococcus plays as causal agent of erysipelas, and agent of secondary infections very frequent in scarlatina.

**Feeding in Convalescence from Scarlatina and Measles.**—Prosper Merklen (*Gaz. des hôp.*, Jan. 4, 1910) gives it as his opinion that whenever a child has passed through a contagious disease which has modified his nutrition it is advisable to increase his food in value in order to build him up. Children from five to fifteen years of age no more than maintain their weight on a diet of 3.50 grams of albumin with a value of eighty calories. With a diet of greater heat value they increase in weight. These figures are higher than those generally given by physiologists for children of the same age in normal health. The author bases his assertions on the careful and systematic dieting and examination of eighteen children recovering from scarlet fever, who were given in three groups, milk diet, farinaceous and meat diet without salt, and the same with salt. The increase in weight was more satisfactory with the milk diet than with the other foods.

**Feeding in the Course of the Infectious Diseases of Childhood.**—Nobécourt (*Jour. de méd. de Paris*, Jan. 4, 1910) says that a diet

insufficient in nourishment affects the child more seriously than the adult, on account of the necessity of supplying materials for growth. Growth often increases during an infectious disease, while in the febrile stage the appetite fails. In the beginning of a febrile disease we should be prepared for indigestion, and should give liquid diet. In a child at the breast the intervals of nursing should be lengthened. In a fever of long duration it is necessary to see that the amount of nourishment is sufficient, but to keep a happy mean between too little and too much. A liquid diet persisted in too long lessens the digestive power, diminishes the glycogenic function, and causes anemia and a long convalescence. The diet should include albumenoids, carbohydrates, and fats; it should be semi-liquid, and given in small quantities at a time. In a bottle-fed infant the milk should be diluted with more water. After two years milk alone may be given. At the end of the febrile period the diet should include cream, animal fats, carbohydrates, soups, gruels, sweet fruits, puddings, etc. Eggs, bread, mutton, fish, and ham serve to increase the nitrogenous materials. To increase the salts of magnesium, potassium, calcium, and phosphoric acid requires a rich and varied diet.

**Noma.**—W. C. Lusk (*Med. Rec.*, Feb., 12, 1910) records a case of noma followed by cicatricial contraction of the jaws in a girl of four years. Extensive loss of skin, by traumatism, from one leg, treated by continuous irrigation with 1:20000 bichloride of mercury, was followed by symptoms of mercurial poisoning and then double gangrenous stomatitis. Recovery followed excision of the indurated area and treatment of the cut surface with pure phenol and alcohol. A plastic operation for the resulting cicatricial contraction was succeeded by a recurrence of the noma, which was treated as before and with the same result. Scrapings from the zone peripheral to the necrotic area gave a pure culture of bacilli resembling the moderately long forms of true diphtheria bacilli, about five times as long as wide, occurring singly, in general slightly curved, and containing granules which stained metachromatically. They also showed a slight irregularity in their diameter. The growth on agar was somewhat more extensive than that of the *Bacillus diphtheriae* being quite abundant after twenty-four hours, and showing a smooth, pearly white surface. On transplantation to blood serum (Loeffler's) they showed a fairly abundant, rather thick growth, and the same morphological characteristics. Since bacteria in pure culture could be demonstrated at the periphery of this disease which invades the tissues by a peripheral advance, and since in this case excision of the noma peripheral to the area of induration, and treatment of the cut surface with pure carbolic acid and alcohol, completely arrested the progress of the disease, it would seem as though the bacteria at the periphery of a noma might be regarded as the causative factor in its production, and that treatment of the disease by excision of it beyond the line of bacterial advance would be rational.

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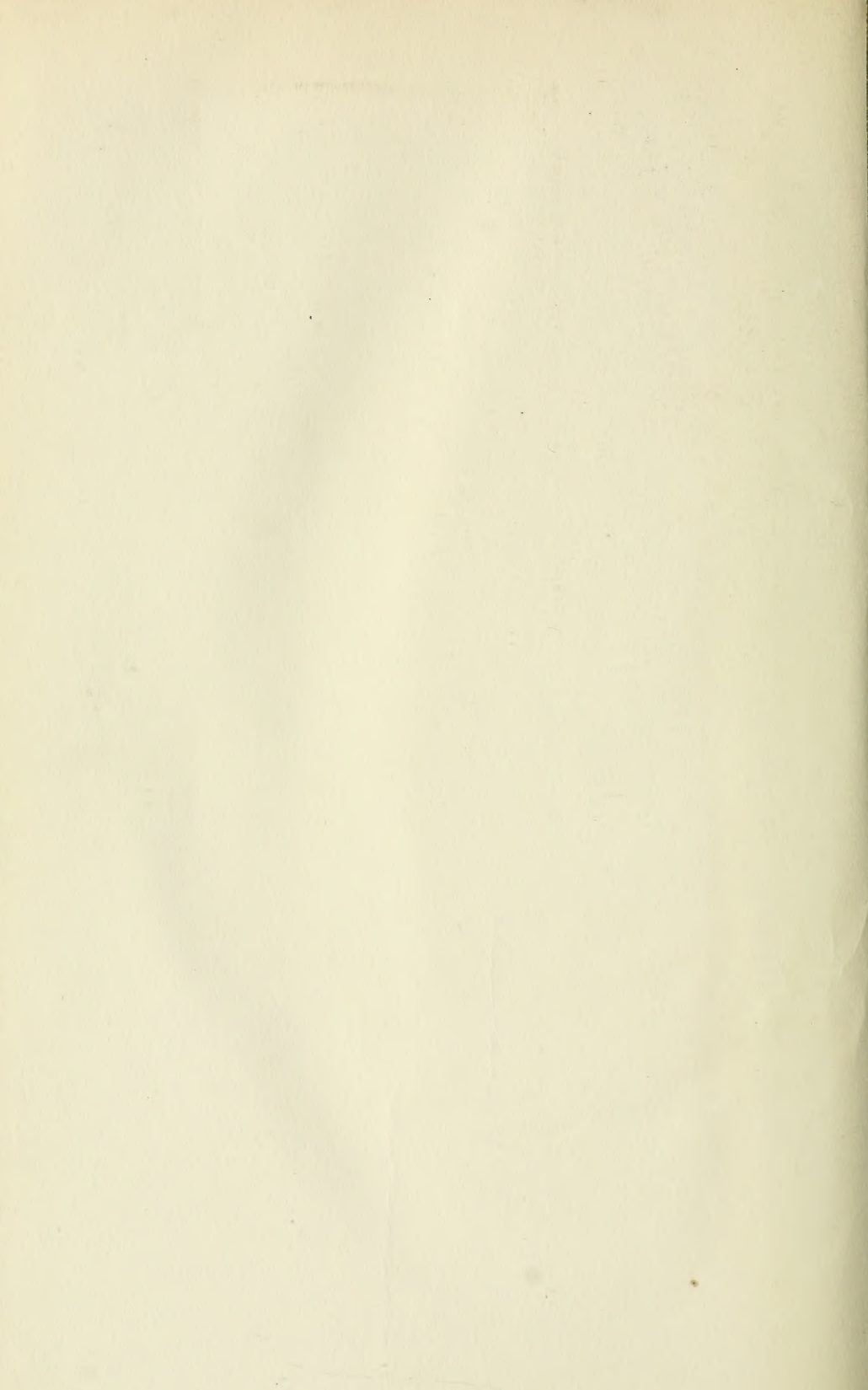
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